

ARCHITECTURAL

RECORD



SEPTEMBER 1947
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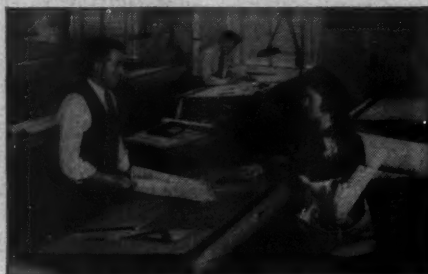
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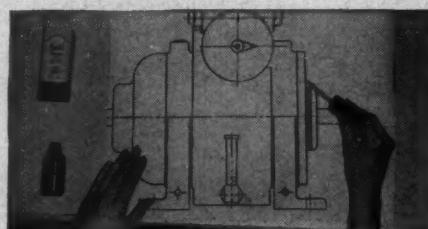
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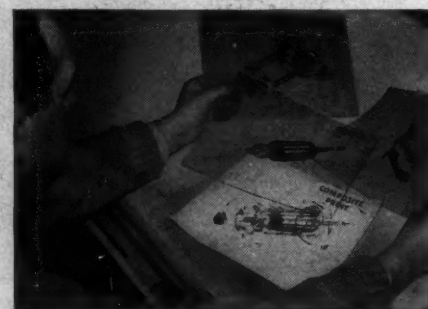
ground.

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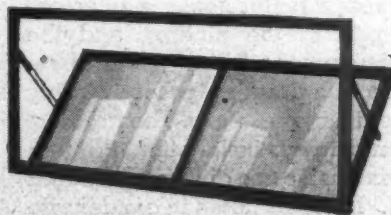
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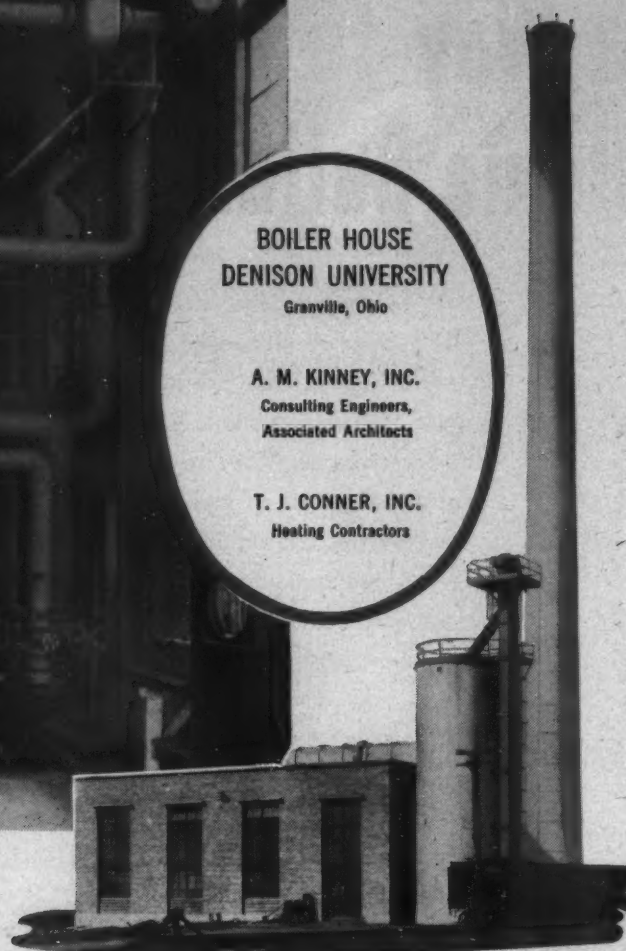
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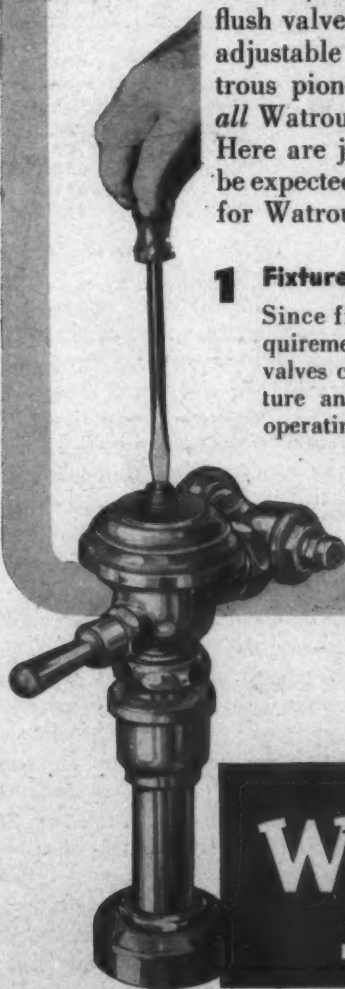
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"All flush valves shall have an external adjustment for length of flush."

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THE RECORD REPORTS

Upturn in Construction Activity Follows End of Government Controls • Congress Will Investigate Housing Costs • Lumber Outlook Mixed • Hospital Funds Ready

Scarcely was the ink dry on the death warrant of government controls over building on July 1st when construction activity began to pick up just as industry leaders long had predicted it would. The trend upward, felt in all parts of the country and in all types of construction was particularly noticeable following the slump in volume from March through June which brought the total for the first half of 1947 down 11 per cent from the 1946 figure for the same period (F. W. Dodge Corporation report).

The upturn following removal of controls was more marked, of course, in non-residential construction than in residential. A tremendous backlog of need in the non-residential field had built up through the years of control — and industry always is willing to pay for what it really needs. In the residential field the high costs of building are proving more of a hurdle.

But despite the cost situation, home building, too, has taken a decided spurt. The National Association of Real Estate Boards reports that New Orleans builders are planning about 2500 new homes; that requests to the Home Builders Association of Greater Cleveland for help in locating builders trebled in three weeks; that home construction in Pittsburgh doubled from the middle of June to the end of July; that the Dallas FHA office predicts 5000 new apartments for that area within a year; and that Los Angeles County builders expect to erect 60,000 new homes in 1948.

Upturn is Official

Not only private organizations but government agencies as well have reported the upward trend in construction volume. The Bureau of Labor Statistics records show 75,000 starts in June — 17 per cent higher than in June a year ago, and higher than any single month since the building boom of the mid-20's. The June figure is significantly above that for the preceding month (72,500 starts) despite the fact that construction usually reaches its peak for the year in May.

Government surveys of construction activity show a June-July upturn of 10 per cent in June and 8 per cent in May. Official comments point to: (1) a trend toward greater building activity in suburban areas and small towns and

villages, where land costs are more favorable; (2) a more than proportionate increase in apartment house construction; and (3) a jump in street and highway work to the extent that one of every 10 construction workers was used in June, 1947 compared to one of every 20 in June of last year.

FHA reports that it received more applications for mortgage insurance in June, 1947 than in any previous month in its experience — more than five times the figure a year ago.

The only slightly sour note in the general chorus was sounded by the Commerce Department in its midyear statement estimating that new construction put in place in 1947 will total about \$12.2 billion. Says CD: "When allowance is made for changes in construction costs, it appears that the physical volume of construction in 1947 will have been exceeded in at least 12 years out of the last 30 and that it will be less than two-thirds of the peak physical volume reached in 1927. On the other hand, the physical volume of construction in 1947 will be slightly higher than in 1946 and between 5 and 10 per cent above the level of 1939."

How High Are Costs?

In this midyear economic report, President Truman took housing costs to task. "The needed stimulus to more housing construction, and also to industrial and commercial construction," he said, "depends largely upon lower prices. Housing costs can and should be substantially lowered through the efforts of material suppliers, builders and workers."

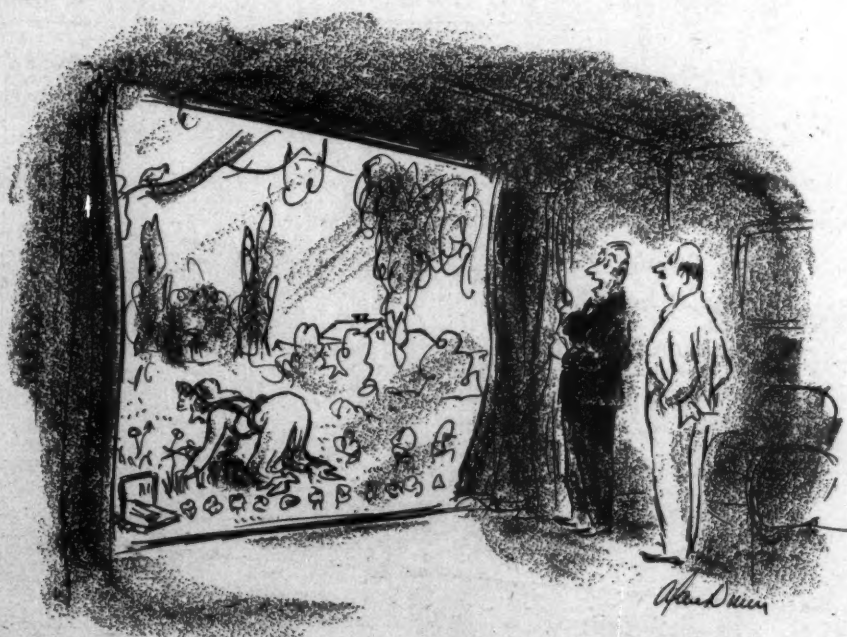
The National Association of Home Builders puts a different slant on housing costs, stating that a smaller portion of family savings or of family income is required today to purchase a new house than in the prewar period. Compared to 1933-39, it says, liquid assets of individuals are up 250 per cent, average individual income is up 119 per cent, but the cost of new houses is up only 82 per cent.

Congress Wants Facts

Before packing up its books for the summer-fall recess, Congress jammed through a record crop of legislation, a good bit of it pertaining directly to housing (see p. 80 for a full report). It also started into the works three housing probes, broadest of which is the \$50,000 House-Senate look-see authorized just before adjournment.

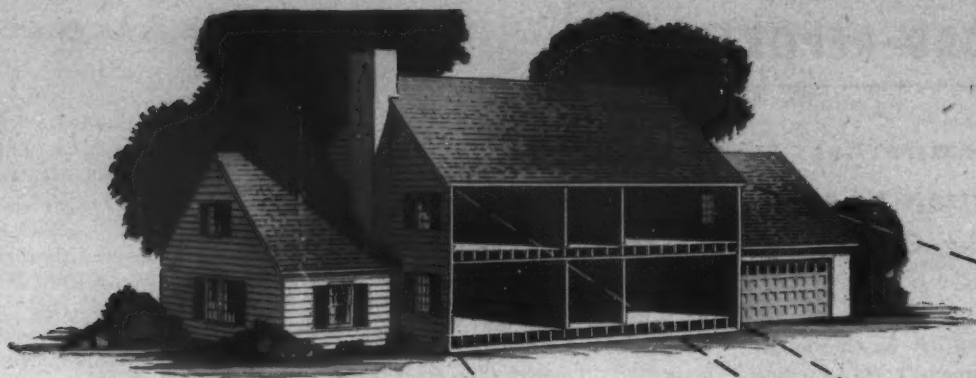
In debate on this joint probe, Senator Taft of Ohio pointed out that while the entire housing field was within the scope of the committee, emphasis is on the cost of housing, "the high cost of building, the possible combinations between materialmen on costs, possible restric-

(Continued on page 10)



"And this is our—ah—picture window . . ."

—Drawn for the RECORD by Alan Dunn



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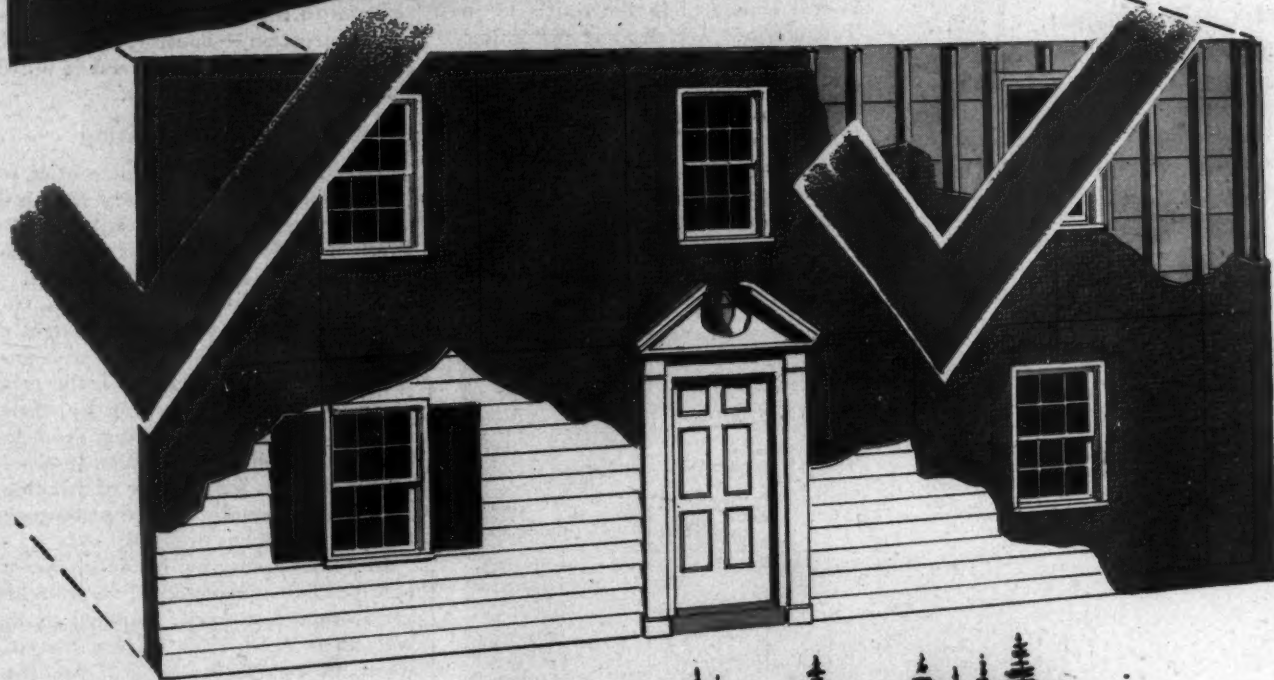
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tive labor practices, building codes in different cities."

Members of the joint committee are: Senator Tobey of New Hampshire, chairman; Senators Flanders of Vermont, Cain of Washington, McCarthy of Wisconsin, Wagner of New York, Taylor of Idaho, Sparkman of Alabama; Representatives Gamble of New York, Sundstrom of New Jersey, McMillen of Illinois, Fletcher of California, Patman of Texas, Rains of Alabama, and Boggs of Louisiana.

Meanwhile, the House Education and Labor subcommittee appointed to inquire into labor problems of housing construction (see ARCHITECTURAL RECORD, Aug., 1947, p. 7) has scheduled the start of field hearings for Oct. 27th in Cleveland.

FPHA Called on Carpet

Third in the series of Congressional probes is an investigation of the Federal Public Housing Authority, requested of the House Committee on Expenditures in Executive Departments by a House Appropriations subcommittee which presented its preliminary findings to the Executive Expenditures unit.

Among charges to be investigated:

"That operating practices approved by FPHA in some instances appear to involve 'improper use of federal funds';

"That the intent of Congress appears to have been circumvented regarding provisions of slum clearance;

"That important provisions of the United States Housing Act have been 'almost completely ignored';

"That sales negotiations based on fair market price or ability to pay are of 'questionable legality';

"That FPHA fosters mutual ownership plans for permanent war housing program not approved by Congress. Such plans include a method by which the FPHA bureaucracy is perpetuated."

NLRB Still Perplexed

The National Labor Relations Board is still enmeshed in the tangle of the Taft-Hartley Act. Adding uncertainty to the already confusing NLRB picture, Congress failed to act on President Truman's nominations to the Board. While this left the way open for the recess appointments, it made certain that the whole question of their confirmation would come up next year.

Meanwhile, the Board debated whether or not it should assert jurisdiction in

building and construction industry cases. It asked Senators, but the Senators couldn't answer. Tendency seems to be to shy away from taking on trouble.

Lumber Outlook Mixed

Both trade and government sources point to prospective stabilization of lumber prices with peak levels believed to have been passed last spring. Consumers, it is explained, are not accepting, as the supply improves, anything that is offered but rather are deferring purchases, turning to other suppliers or using alternative materials. Lower grades in particular hit heavy resistance some time back.

This trend is affecting smaller mills, causing them to shut down or shift from lumber to ties—a development which may cut down earlier estimates of lumber production this year.

Continuance of the current trends in the lumber market is expected by the experts to relate itself to developments in construction—housing, commercial, industrial. A downward trend is noted in building materials prices.

Home Ownership Increasing

Indicative housing characteristics of various metropolitan districts for April 1947 in comparison with April 1940 are given in a series of current population reports by the Bureau of the Census.

These sample population surveys, announced city by city, are consistently showing—at least in the early announcements—an increase in the percentage of homes occupied by their owners and a corresponding drop in tenant-occupied dwelling units. In practically all cases the number of dwelling units has increased while the percentage needing repairs has dropped.

In Philadelphia, for instance, owner occupied homes represented 60 per cent of the total last April compared to 43 per cent in April, 1940. In New Haven, Conn., the increase was from 37 per cent to 52 per cent; in Columbus, Ohio, from 41 to 52 per cent, and in Memphis, Tenn., from 32 to 46 per cent.

Increase in the number of dwelling units is ranging largely from 10 per cent to 25 per cent (Washington, D. C., however, shows a 40 per cent gain).

Housing Agencies Recast

From the standpoint of federal activity in housing, the new reorganization plan, proposed by President Truman some months back and finally given a Congressional green light, should not be overlooked.

Raymond Foley, former head of NHA and FHA, now is Administrator of the new Housing and Home Finance Agency, which embraces all the housing agencies and principal housing functions of the federal government. There are three

(Continued on page 12)



Hedrich-Blessing Photo

New hospital for the special treatment of alcoholics will be residential in character

NOVEL HOSPITAL

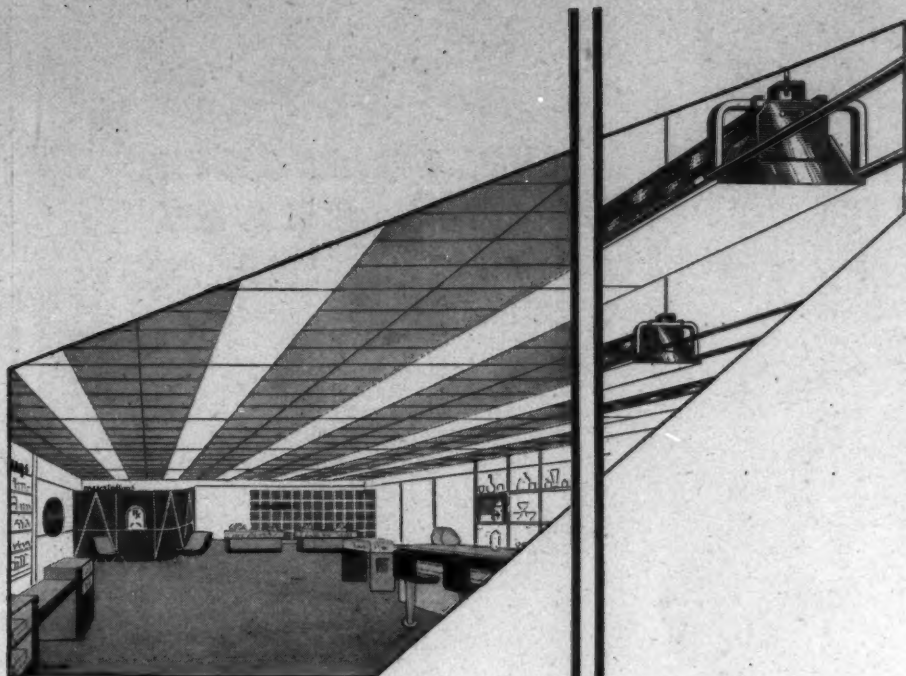
Preliminary plans have been announced by the Keeley Institute of Chicago for a new hospital at Dwight, Ill., designed expressly for the rehabilitation of alcoholics.

With no precedent to follow in the design of such a "special purpose" building, architects Schweiker and Elting have developed plans keyed by a combination of functionalism and esthetic appeal—the latter considered especially important in the treatment of alcoholics. Since all patients will be am-

bulatory, the building will be residential in character.

The plans provide for 84 single and double rooms, a lounge, dining facilities for 130, kitchen, laundry, laboratory, doctors' and administration offices, medical treatment rooms, barber shop and a small store.

Of reinforced concrete and brick construction, the building will have acoustical plaster ceilings throughout and radiant panel heating. Concrete floors will be cork covered in corridors and offices and carpeted in bedrooms. Total floor area will be 47,000 sq. ft.



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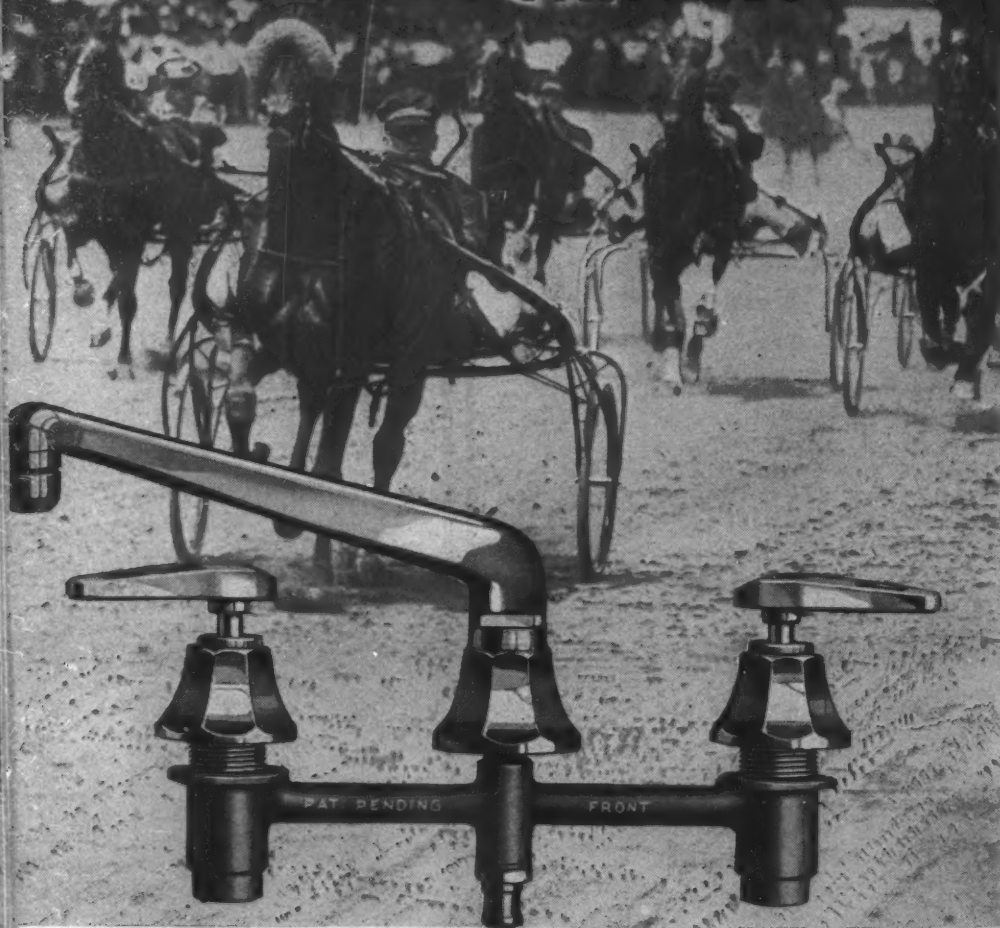
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Salter Masterpiece Fixtures are fast becoming the "favorite" of plumbers, contractors and home owners. This "out in front" position has been attained not only through their superior "EZE" close construction and sparkling, distinctive appearance, but also from the fact that a most complete line is available to meet all brass plumbing requirements. The Salter-Glauber Line, in addition to built-in and regular trim, includes all types of check, globe, gate and radiator valves, tubular traps and drains, barber shop fixtures, special laboratory fittings, plus a complete line of ground-key water works valves and fittings. If you are not already capitalizing on Salter's "out in front" reputation for quality and delivery, contact your local plumbing jobber or supplier without delay.

602—Masterpiece Sink fixture with one piece concealed body for steel and cast iron sinks with 3 openings on 4" centers. Furnished complete with automatic spray. 603 without spray—1602 and 1603 for wood ledge installation.



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MASTERPIECES IN BRASS

10 Ninth Street, Marysville, Ohio

and division THE GLAUBER BRASS MFG. CO., Kalamazoo, Ohio

THE RECORD REPORTS

(Continued from page 10)

operating units: the Home Loan Bank Board, the Federal Housing Administration, and the Public Housing Administration.

The plan barely squeezed through Congress by the refusal of the Senate to reject the proposal, which earlier had been rejected by the House. Senate vote was 38 to 47. Under the law, an executive reorganization plan becomes effective within 60 days unless it is rejected by both House and Senate before that time.

Hospital Funds Ready

Construction of \$225 million worth of hospital and health facilities during the fiscal year of 1948, says the U.S. Public Health Service, will be possible under the Labor-Social Security Appropriations Act signed on July 8th by the President.

Although no federal funds were directly appropriated for this purpose, the act sets up a procedure which obligates the federal government to pay up to \$75 million as its share of approved hospital construction. As Surgeon General Thomas Parran points out, since the federal government pays one-third of the cost, this brings the potential combined total of federal, state and local funds to \$225 million. Under the terms of the act, any construction project approved by the Surgeon General creates a contractual obligation on the part of the federal government to meet its share of the cost.

This legislation implements the construction phase of the Hospital Survey and Construction Act passed by Congress last year, authorizing the appropriation of \$3 million for survey and planning and \$75 million for construction annually for five years. The \$75 million just appropriated for the fiscal year 1948 is the first money to be made available for construction. Funds may be used for health centers, laboratories, clinics and other medical facilities, as well as for hospitals.

USPHS Explains Procedure

As USPHS explains, no funds have been actually appropriated for construction purposes by the Appropriations Act, but will be made available through the technique of "contractual obligations." In other words, Congress has authorized the Surgeon General to incur obligations on the part of the federal government up to \$75 million as the government's share of approved hospital construction.

A complete interpretation of the "contractual obligation" technique and

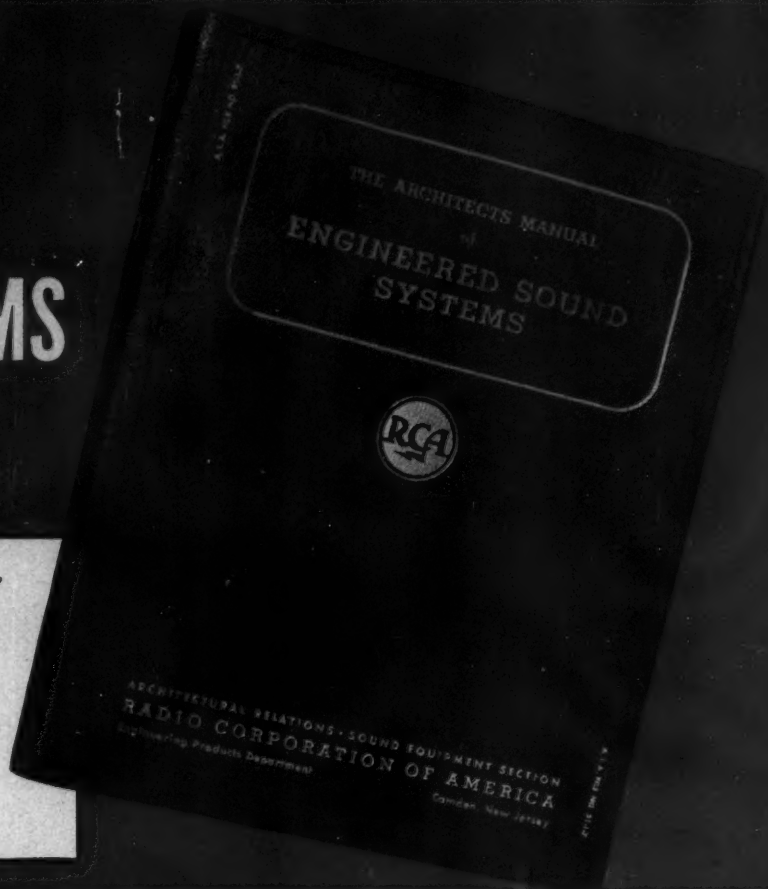
(Continued on page 14)

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THE RECORD REPORTS

(Continued from page 12)

the procedure which it sets up for obtaining funds has been prepared by USPHS. Copies may be obtained from the Division of Hospital Facilities, U.S. Public Health Service, Federal Security Agency, Washington 25, D. C.

Standardization Moves

In cooperation with state and local health authorities, the FHA has developed standards for the installation of individual water supply and sewage disposal systems. These are the minimum requirements for FHA financing, and intended as a guide for builders of homes in locations where public or community water or sewerage systems have not been installed.

The consolidation of two divisions of the National Bureau of Standards has been announced: Commercial Standards and Simplified Practice are now united in a single division called Commodity Standards. The new unit will continue the Bureau's coordinating role in the development of voluntary simplified practice recommendations and commercial standards with industrial and technical groups. In addition, it will be responsible for coordinating Bureau work for the the Federal Specifications Board. Edwin W. Ely, former chief of the Simplified Practice Divisions, has been appointed chief of the division, and F. W. Reynolds, former acting chief of Commercial Standards, assistant chief.



ON THE CALENDAR

Sept. 11-12: Businessmen's Conference on Urban Problems, Chamber of Commerce of the U. S., Washington, D. C.

Sept. 15-19: National Technical Conference, Illuminating Engineering Society, Hotel Roosevelt, New Orleans.

Sept. 15-Oct. 11: Exhibit, "Visualizing the Modern House" (architectural, interior and landscape designs, furniture, paintings, sculpture, pottery), Bertha Schaefer Gallery, 32 E. 57th St., New York City.

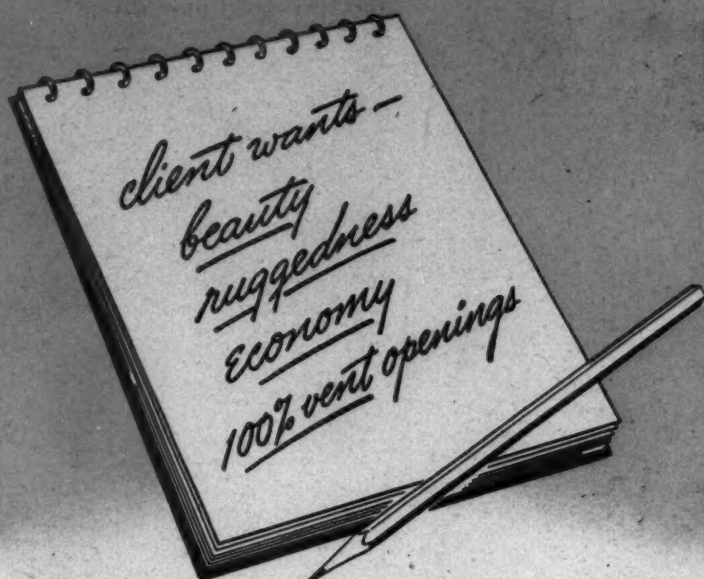
Sept. 22-25: 49th Annual Convention, American Hospital Association, St. Louis, Mo.

Oct. 14-19: 1947 Westchester Better Homes Exposition, Westchester County Center, White Plains, N. Y.

Oct. 18-24: National Metal Exposition, International Amphitheatre, Chicago.

Oct. 20-23: Annual Fall Meeting, Iron and Steel Division and The Insti-

(Continued on page 16)



SPECIFY FENCRAFT CASEMENTS

Clubs, dormitories, nurses' homes, restaurants and many other buildings call for windows that combine the beauty and easy operation of a residential-type casement with extra ruggedness and excellent provision for ventilation.

For such uses Fenecraft Standard Casement Windows fill the bill. They're expertly made by craftsmen of America's oldest and largest steel window manufacturer. They're quality windows in every respect, suitable for the finest buildings.

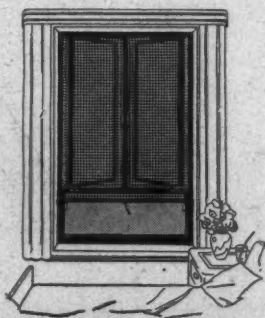
ECONOMY THROUGH STANDARDIZATION

Fencraft Casements, as well as Fenecraft Projected and Fenecraft Combination Windows, are standardized in a range of sizes to fit almost any need.

This standardization saves in two ways: first, because manufacturing economies result in lower costs; second, because co-ordination with modular dimensions of modern masonry construction practice saves installation time.

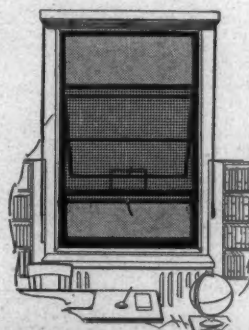
Fencraft Windows offer other benefits, too—more daylight, safe washing of both sides from inside the room, permanently-easy operation, superior weathertightness. Screens are attached easily and safely from inside the room. This easy washing and easy screening pays off—year after year—in lower maintenance costs.

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FENCRAFT PROJECTED WINDOW

Protection from weather, even when open. Open-out vent acts as canopy over opening. Open-in vent deflects air upward, sheds water outside.

COMBINATION

PROJECTED

CASEMENT

Fenestra

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Dept. AR-9
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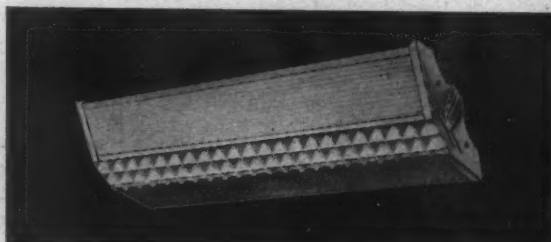
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THE RECORD REPORTS

(Continued from page 14)

tute of Metals Division, American Institute of Mining and Metallurgical Engineers, Stevens Hotel, Chicago.

Oct. 20-24: Annual Meeting, American Society for Metals, Palmer House, Chicago.

Oct. 20-24: Annual Meeting, American Welding Society, Sherman Hotel, Chicago.

Oct. 20-24: Theater Engineering Conference and 62nd Semi-Annual Convention, Society of Motion Picture Engineers, Hotel Pennsylvania, New York.

Oct. 22-25: 1947 Convention, New York State Association of Architects, Hotel Commodore, New York City.

Oct. 30-Nov. 1: 15th Semi-Annual Meeting, American Society of Tool Engineers, Statler Hotel, Boston, Mass.

Nov. 3-7: 2nd International Lighting Exposition and Conference, Stevens Hotel, Chicago.

Nov. 9-14: 40th Convention, National Association of Real Estate Boards, San Francisco, Calif.

Nov. 10-13: 25th Annual Convention, The American Institute of Steel Construction, Inc., Roney Plaza Hotel, Miami Beach, Fla.

Dec. 2-5: Annual Meeting, American Society of Mechanical Engineers, Chalfonte-Haddon Hall, Atlantic City, N. J.

CODE REVISION

CD Issued Pamphlets

Cooperating with nation-wide moves toward the modernization of building codes, the Commerce Department has issued two pamphlets intended to aid city and state officials in the revision of their codes. These documents, CD-1 and CD-2 respectively, list publications on the preparation and revision of building laws and give a work sheet for checking standards and specifications in the various codes. Copies may be obtained upon request from the Construction Division, Department of Commerce, Washington 25, D. C.

Massachusetts Law

The Commonwealth of Massachusetts has recently enacted a law which makes it legally possible for a prefabricator to have his system tested and approved by a state board, and thereafter to sell throughout a state-wide market, free of local building code restrictions and difficulties.

Under the new law, two sections (3J and 3K) are added to Chapter 143 of the General Laws of Massachusetts. Briefly, they provide that the Board of Standards in the state Department of Public

(Continued on page 128)



AT WORK OR PLAY

Radiant Heat SERVES AND SAVES

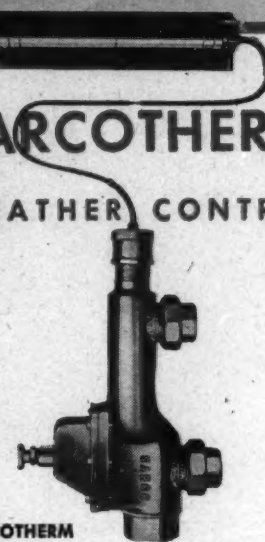
Residence of Peter P. Petrofsky, Architect Frank Kecko & Son, Contractors, Crane Co., Wholesalers, Bridgeport, Conn.

Children playing on the floor in a Connecticut home, experts working on the huge floor of a rug factory in New Jersey. No radiators—ducts, or heating equipment in sight—yet everybody is comfortable regardless of the vagaries of a Northern Climate.

Radiant heat with Sarcotherm outdoor control costs little more—for installation—much less for fuel than other forms of heating. It is a fully automatic, mechanical system. It results in favorable, enthusiastic and wide-spread publicity for the architect and contractor wherever installed. Available as a packaged unit in all distribution centers. Ask for the bulletin.

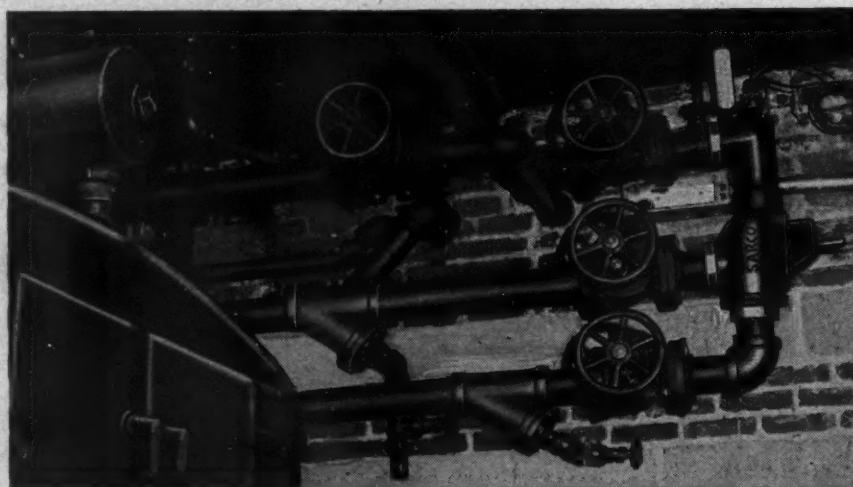
SARCOTHERM

WEATHER CONTROL

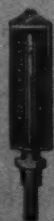


SARCOTHERM VALVE

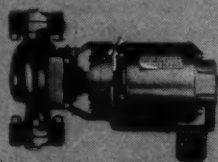
Recent installation at Schulz & Behrle, Interior Decorators, East Orange, N. J.



SARCOTHERM CONTROLS, INC., 280 Madison Avenue, NEW YORK 16, N. Y.



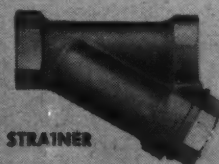
THERMOMETER



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FLOW VALVE



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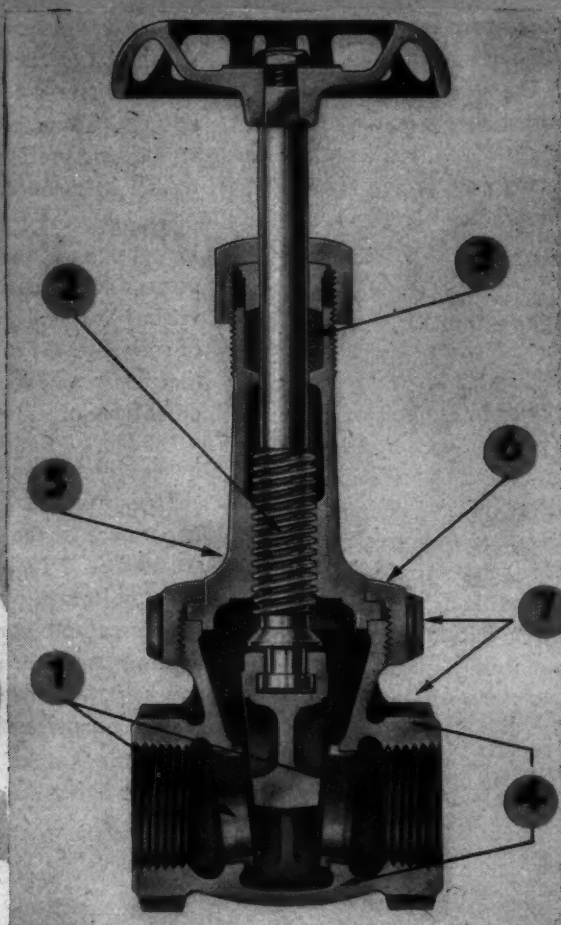
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IT'S **NEW** ... IT'S **FAR AHEAD** — IN **DESIGN**—IN **DURABILITY**

JENKINS FIG. 270-U BRONZE GATE VALVE



1. "MONEL" SEAT RINGS EXPANDED IN BODY The seat rings, expanded into place in the body, are equivalent to integral faces. The "MONEL" metal used is about $2\frac{1}{2}$ times the hardness of valve body bronze—provides exceptional resistance to erosion and corrosion.

2. LARGE SPINDLE THREADS LAST LONGER The threads on the traveling spindle are exceptionally long and large in diameter. This reduces wear to a minimum and insures easy operation. Spindle metal is hard, tough manganese bronze.

3. DEEP STUFFING BOX—MORE PACKING Deeper than most 200 lb. gate valves, it holds more packing. Keeps stuffing box tight around spindle with less friction, and permits spindle to be turned with less effort.

4. LIBERAL BODY DIMENSIONS ADD STRENGTH Made of 35,000 lb. tensile strength cast bronze—has full length of pipe threads and liberal clearance between threaded ends and diaphragm wall. Union assembly reinforces and strengthens body neck.

5. EXCEPTIONALLY RUGGED BONNET Projection on bottom assures snug fit into neck of body. Large diameter Acme threads, with long bearing, assure improved wear resistance. Machined bevel on underside matches beveled shoulder on spindle for back-seating under pressure and protecting spindle threads when valve is wide open.

6. HEAVY BONNET RING Union Bonnet joint withstands exceptionally high hydraulic pressures. Liberal thread engagement assures assembly that can be made tight and kept tight after repeated disassembly.

7. BODY AND BONNET RING LUGS Rugged sturdy lugs of novel design on body ends and bonnet ring permit repeated application of conventional wrenches.

AGAIN JENKINS PRACTICAL ENGINEERING SETS THE STANDARD FOR VALVE ECONOMY

● IF ANY PART of the seating combination is to eventually need replacement, why not have it the most accessible part—the wedge rather than the seat? It's easier, quicker, cheaper to slip on a new wedge, than to install a new body!

That's the principle on which Jenkins Engineers designed the new Fig. 270-U Bronze Gate Valve, with a high-quality bronze wedge seating

against MONEL seat rings expanded in the body. With this sensible design, the wear affects only the most accessible part—the bronze wedge—which can be replaced by simply slipping it off the stem and slipping on a new one. Prolonged tests, in toughest service, prove it the best seating combination to beat wear, reduce care.

This new, better Fig. 270-U will

give you unequalled economy in any service requiring a 200 lb. pressure Bronze Gate, and especially under severe conditions, such as in oil refineries, dye houses, chemical, food, and rubber plants.

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FOLDER**



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Send Bronze Gate Valve Folder.

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SELECTION OF RESILIENT FLOORS FOR COMMERCIAL INTERIORS

Wherever goods or services are offered for sale, floor design can play an important part in the technique of modern merchandising. Today's selling practices call for the floor, along with the other interior elements, to exert a subtle but definite influence on the customer. The colors and design possibilities of resilient flooring materials, such as linoleum, asphalt tile, Linotile®, rubber tile, and cork tile make them ideally suited for this purpose. They can help create the proper atmosphere for any type of business.

Naturally, in many cases, cost is an important factor in determining which type of resilient flooring to use. Rubber tile, Linotile, and cork tile are in the luxury class and generally considered best suited for a shop or office dealing in merchandise or services with class appeal. However, the selection of a lower cost material may be justified on occasion. Rented offices and stores, as well as temporary locations, often call for the consideration of a less expensive flooring such as linoleum or asphalt tile. Although these materials are lower in cost, they can be laid in designs that are rich or dignified in appearance.

FLOORS FOR LUXURY SETTINGS

For shops and offices that require the ultimate in luxurious floors, rubber or cork tile should be given

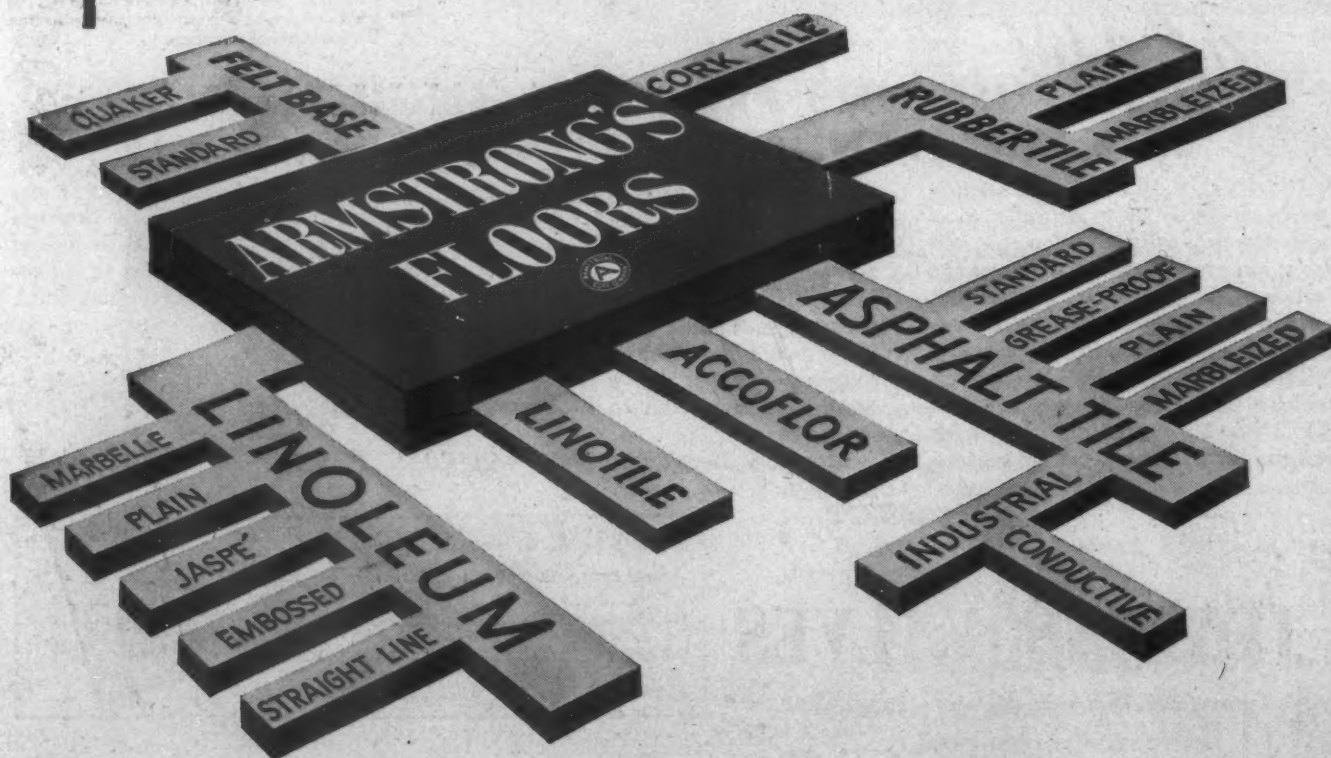
first consideration. Rubber tile is generally accepted as the most luxurious resilient flooring from the standpoint of color and luster. Its satin-like sheen and rich, delicate colors blend with the most elaborate settings. These characteristics are the result of the vulcanizing process through which this material passes during its manufacture.

The extreme resilience of cork tile gives it a feeling of luxury underfoot. As a result of the baking process during manufacture, the tiles are produced in various brown shades. The random shading in a floor of cork tile adds to its rich appearance. However, cork tile floors require more careful maintenance than other types of resilient floors.

FLOORS FOR MASS APPEAL STORES

Low overhead and operating costs usually are of importance to the business where mass appeal items are sold in a highly competitive market. Because of this, linoleum and asphalt tile floors are recommended for stores and offices in this field. Although these flooring materials are less expensive than rubber tile and cork tile, they can be used in ways that create highly decorative effects.

Linotile is a resilient flooring material that is suitable for either class or mass appeal stores. Its beauty





Richly styled interiors call for flooring materials and designs that add to the feeling of elegance established by the general architecture and furnishings. The high style of this entrance lobby is further emphasized by the lustrous sheen of the rubber tile floor.

and rich appearance make it suitable for high-style floors. The exceptional durability of Linotile, on the other hand, makes it a material to consider whenever a floor must have the ability to withstand heavy store traffic.

PERIOD STYLING

Interiors designed to reflect specific period styles call for special consideration in flooring. The resilient tiles and certain types of linoleum, especially the jaspés, Marbelles, and some of the embossed inlaid patterns, are ideally suited for period styled interiors such as 17th Century and Early American Colonial. For example, plain colored asphalt tile can be laid in random "flagstone" designs for a suitable floor to enhance the effect created with pine panelled walls and beamed ceilings. Brick patterns in embossed linoleum also are desirable for this type of interior.

SPECIAL EFFECTS

Elaborate restaurants, cocktail bars, theatres, and other types of interiors often require "showmanship" in decoration. Such interiors call for floor designs seldom used elsewhere. But whether the atmosphere is refined or flamboyant, it can be met in any of the resilient tiles as well as in the plain, jaspé, and Marbelle linoleum floors. Striped or zigzag floor designs can be created in highly contrasting colors for brilliant effects.

Special insets can be worked out in resilient flooring materials, too. Names, initials, trade-marks, or decorative characters of any type can be installed right in the floor. Today, it is not unusual for hand-cut insets to contain as many as several hundred small pieces in many colors.

Resilient floors also offer unusual opportunity to plan designs that separate departments in a large store. And with directional lines or sweeping color contrasts these floors can help to direct the general flow of traffic to areas that otherwise get less attention.

For practical assistance in the specification of resilient flooring and suggestions for floor design, contact any of Armstrong's District Offices or write directly to Armstrong Cork Company, Floor Division, 2409 Duke Street, Lancaster, Pennsylvania.



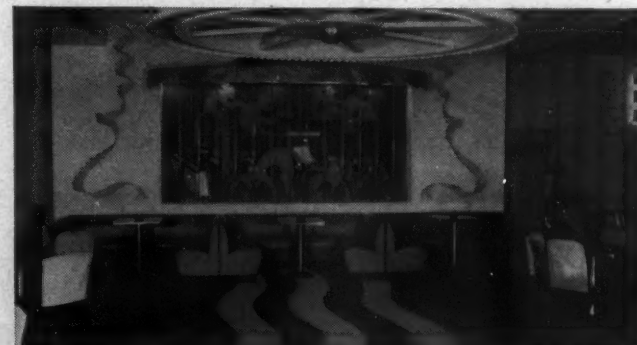
Smart designing applied to floors of linoleum and asphalt tile can give to these floors a richness suitable for commercial architecture of unconventional style. Here, the design in the floor of asphalt tile follows the contours of the display counters for unusual effect.



Tavern-style and other interior decoration employing paneled or beamed treatments on walls and ceilings call for "rustic" floor effects which can be obtained with brick patterns in embossed linoleum. Random designs in the resilient tiles also can be used.



Custom cut insets in resilient flooring materials help advertise a business. Decoratively styled to accentuate the floor design, smart insets create an impression that's remembered by customers. Names, monograms, and trade-marks can be copied in any resilient floor.



Special effects in resilient floors are almost without limit. Spectacular interior decoration can become fully effective through floor designs. Brilliant colors can be used as in this linoleum floor with a brown field and orange and canary yellow serpentine bands.



Complete wall of Satinol Louvrex lets light filter from reception space to conference room. Offices of Robert Gruen Associates.

Interior window glazed with Satinol Louvrex assures privacy plus light. Designed by Robert Gruen Associates.



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Clear or *Satinol*-finished, this fine glass lets light filter through freely...yet its distinctive patterns obscure the view, making *Patterned Glass* completely practical for light-transmitting panels, partitions, or entire walls.

Blue Ridge Patterned Glass is available in a wide range of linear, square or all-over patterns to add a sparkling look of luxury to modern or period settings. Consult your nearby L·O·F Glass Distributor. Write for our *Patterned Glass Modernization* book. Blue Ridge Sales Division, Libbey-Owens-Ford Glass Company, 297-A Nicholas Building, Toledo 3, Ohio.



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Philadelphia.....The W. M. Mayer Co.
Scranton.....	
RHODE ISLAND	
Providence.....	Pitche & Co.
SOUTH CAROLINA	
Charleston.....	Acousti Engineering Co. of the Carolinas
SOUTH DAKOTA	
Sioux Falls.....	Insulation Sales Co., Inc.
TENNESSEE	
Chattanooga.....	
Knoxville.....Lon Herndon Co.
Nashville.....	
Memphis.....	Acoustics & Specialties Co.
TEXAS	
Dallas.....S. W. Nichols Co.
Houston.....	
San Antonio.....	
El Paso.....	The Jay Grear Corp.
UTAH	
Salt Lake City.....	Lauren Burt, Inc.
VIRGINIA	
Norfolk.....	
Richmond.....	John H. Hampshire, Inc.
Roanoke.....	
WEST VIRGINIA	
Huntington.....	E. C. Decker & Co.
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Wheeling.....	Harry C. Lerner Co.
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- ☐ Will not chip, crack or craze.
- ☐ Do not reflect harsh, metallic light.
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WRITE TODAY for your copy of our latest catalog A9, containing Metlwalspecifications, drawings and installation photos. See how Metlwal can help you plan beautiful interiors. Address: Martin-Parry Corporation, Fisher Building, Detroit 2, Michigan.



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MP
PRODUCTS

METLWALS

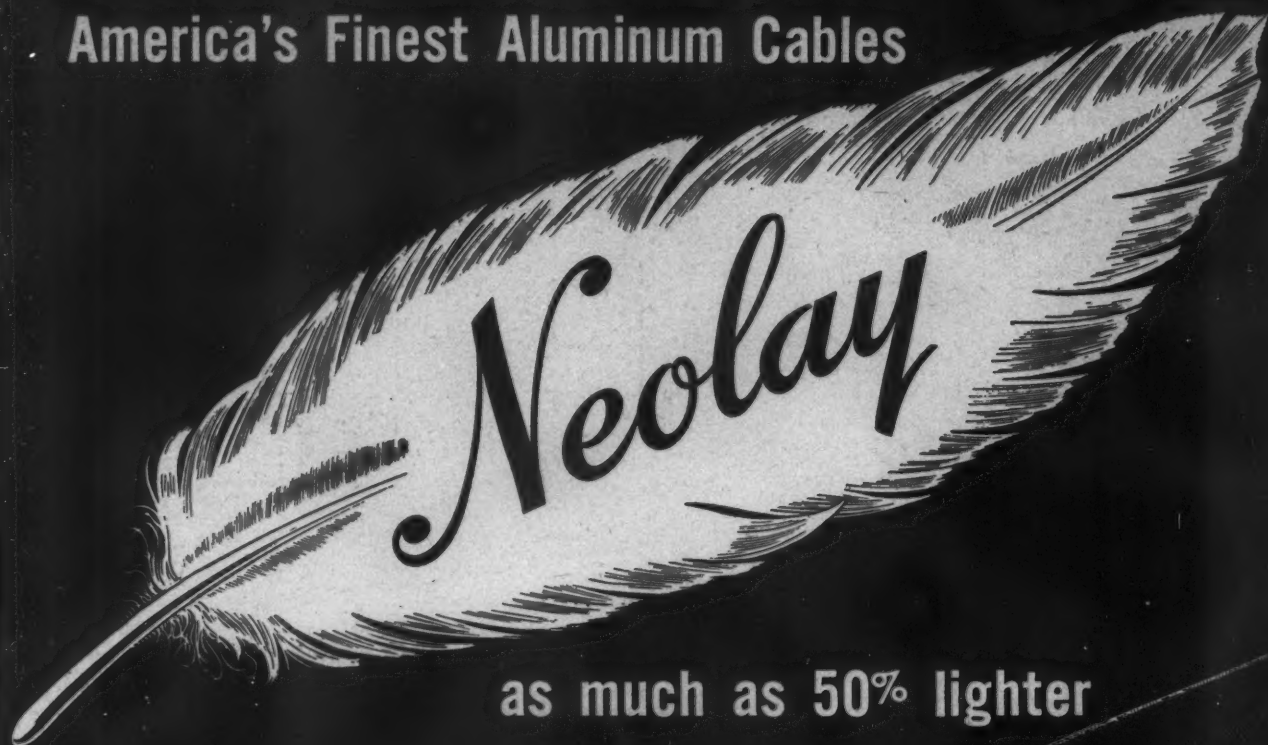
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complete line of sliding hanger type of suspension fittings permits mounting at any point along the line and reduces installation costs.

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Springlox



simplifies insertion and removal of lamps. Simply push one end of lamp into the holder and let the resulting spring pressure push other end into facing socket. Spring pressure locks lamp securely into position. Lamp cannot fall out.

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extra strength insures accurate and rigid alignment of long continuous lines.

NEW
Shielding



new longitudinal shield increases overall shielding from 13° to 27°. An optional attachment.

New 28-page "LITE-LINE 40" Catalog and Lighting Manual Shows How to Obtain MORE Productive Lighting at LOWER Overall Cost!

"Lite-Line 40" gives further impetus to the use of continuous lines of light for economical, efficient, high level fluorescent illumination of work places.

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rigidity... further minimization of direct lamp glare... and much... much easier lamp insertion and removal. Further, "Lite-Lines" are now available in two reflector widths—Type A (11½" wide) and Type E (13½" wide).

Complete specifications and design data for "Lite-Line 40" System are provided in the new 28-page bulletin just off the press. Contains detailed dimensional data, descriptions and illustrations of suspension fittings and charts to simplify planning installations and preparing specifications. **FOR YOUR COMPLIMENTARY COPY, write for BULLETIN LS, BENJAMIN ELECTRIC MFG. CO., DEPT. Q-1, DES PLAINES, ILLINOIS.**

R2413RS



BENJAMIN
Lite-Line System

CONSTRUCTION COST INDEXES — Labor and Materials

United States average 1926—1929=100

Compiled by Clyde Shute, manager, Statistical and Research Division, F. W. Dodge Corporation, from data collected by E. H. Boeckh & Associates, Inc.

NEW YORK

ATLANTA

Period	Residential		Apts., Hotels, Office Bldgs. Brick and Concr.	Commercial and Factory Buildings Brick and Concr.		Residential		Apts., Hotels, Office Bldgs. Brick and Concr.	Commercial and Factory Buildings Brick and Concr.	
	Brick	Frame		Brick and Concr.	Brick and Steel	Brick	Frame		Brick and Concr.	Brick and Steel
1920	136.1	136.9	123.3	123.6	122.6	122.8	122.9	108.6	109.8	105.7
1925	121.5	122.8	111.4	113.3	110.3	86.4	85.0	88.6	92.5	83.4
1930	127.0	126.7	124.1	128.0	123.6	82.1	80.9	84.5	86.1	83.6
1935	93.8	91.3	104.7	108.5	105.5	72.3	67.9	84.0	87.1	85.1
1939	123.5	122.4	130.7	133.4	130.1	86.3	83.1	95.1	97.4	94.7
1940	126.3	125.1	132.2	135.1	131.4	91.0	89.0	96.9	98.5	97.5
1941	134.5	135.1	135.1	137.2	134.5	97.5	96.1	99.9	101.4	100.8
1942	139.1	140.7	137.9	139.3	137.1	102.8	102.5	104.4	104.9	105.1
1943	142.5	144.5	140.2	141.7	139.0	109.2	109.8	108.5	108.1	108.7
1944	153.1	154.3	149.6	152.6	149.6	123.2	124.5	117.3	117.2	118.2
1945	160.5	161.7	156.3	158.0	155.4	132.1	133.9	123.2	122.8	123.3
1946	181.8	182.4	177.2	179.0	174.8	148.1	149.2	136.8	136.4	135.1
Mar. 1947	211.2	217.2	196.2	194.4	192.9	178.7	182.9	153.4	152.0	153.1
Apr. 1947	217.6	220.8	204.7	205.9	202.4	179.2	183.3	154.4	153.5	153.5
May 1947	219.1	221.6	205.6	206.8	203.4	180.2	183.9	155.1	154.1	154.2
June 1947	219.3	221.8	205.9	207.0	203.6	180.4	184.1	155.4	154.3	154.4
	% increase over 1939					% increase over 1939				
June 1947	77.5	81.2	57.5	55.1	56.4	109.0	121.5	63.4	58.4	63.0

ST. LOUIS						SAN FRANCISCO					
Period	Residential		Apts., Hotels, Office Bldgs. Brick and Concr.	Commercial and Factory Buildings Brick and Concr.		Period	Residential		Apts., Hotels, Office Bldgs. Brick and Concr.	Commercial and Factory Buildings Brick and Concr.	
	Brick	Frame		Brick and Concr.	Brick and Steel		Brick	Frame		Brick and Concr.	Brick and Steel
1920	118.1	121.1	112.1	110.7	113.1	1920	108.8	107.5	115.2	115.1	122.1
1925	118.6	118.4	116.3	118.1	114.4	1925	91.0	86.5	99.5	102.1	98.0
1930	108.9	108.3	112.4	115.3	111.3	1930	90.8	86.8	100.4	104.9	100.4
1935	95.1	90.1	104.1	108.3	105.4	1935	89.5	84.5	96.4	103.7	99.7
1939	110.2	107.0	118.7	119.8	119.0	1939	105.6	99.3	117.4	121.9	116.5
1940	112.6	110.1	119.3	120.3	119.4	1940	106.4	101.2	116.3	120.1	115.5
1941	118.8	118.0	121.2	121.7	122.2	1941	116.3	112.9	120.5	123.4	124.3
1942	124.5	123.3	126.9	128.6	126.9	1942	123.6	120.1	127.5	129.3	130.8
1943	128.2	126.4	131.2	133.3	130.3	1943	131.3	127.7	133.2	136.6	136.3
1944	138.4	138.4	135.7	136.7	136.6	1944	139.4	137.1	139.4	142.0	142.4
1945	152.8	152.3	146.2	148.5	145.6	1945	146.2	144.3	144.5	146.8	147.9
1946	167.1	167.4	159.1	161.1	158.1	1946	159.7	157.5	157.9	159.3	160.0
Mar. 1947	196.9	198.9	175.8	176.4	175.3	Mar. 1947	185.6	184.9	174.2	175.7	178.4
Apr. 1947	199.1	200.3	178.0	179.0	176.9	Apr. 1947	188.6	187.0	177.8	180.4	180.7
May 1947	199.3	200.5	178.3	179.2	177.1	May 1947	188.8	187.2	178.1	180.6	180.9
June 1947	202.2	202.2	182.8	185.4	182.1	June 1947	189.0	187.4	178.4	180.8	181.1
	% increase over 1939						% increase over 1939				
June 1947	83.3	89.0	54.0	54.7	53.0	June 1947	79.0	88.7	51.9	48.3	55.4

The index numbers shown are for combined material and labor costs. The indexes for each separate type of construction relate to the United States average for 1926-29 for that particular type — considered 100.

Cost comparisons, as percentage differences for any particular type of construction, are possible between localities, or periods of time within the same city, by dividing the difference between the two index numbers by one of them; i.e.:

index for city A = 110
index for city B = 95

(both indexes must be for the same type of construction).
Then: costs in A are approximately 16 per cent higher than in B.

$$\frac{110-95}{95} = 0.158$$

Conversely: costs in B are approximately 14 per cent lower than in A.

$$\frac{110-95}{110} = 0.136$$

Cost comparisons cannot be made between different types of construction because the index numbers for each type relate to a different U. S. average for 1926-29.

Material prices and wage rates used in the current indexes make no allowance for payments in excess of published legal prices, thus, indexes reflect minimum costs and not necessarily actual costs.

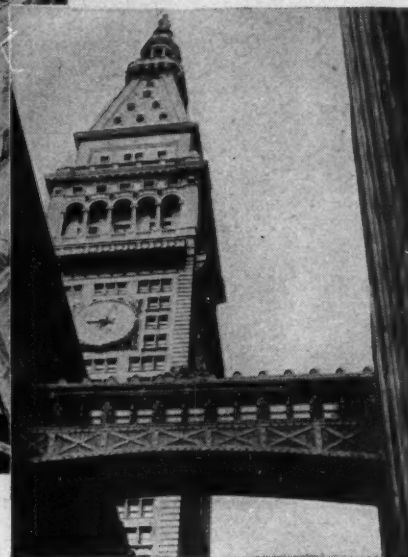
These index numbers will appear whenever changes are significant.



Anaconda 20-oz. Sheet Copper originally installed in 1920, is being removed from the famous footbridge of the Metropolitan Life Insurance Company to be re-installed on a new bridge.

Arthur O. Angilly, New York architect, who supervised relocation of the bridge, reports the copper as sound and enhanced in appearance by its rich green patina. Nicholson and Galloway, founded in 1849, not only installed the sheet metal work on the original bridge, but also did the work of removal and re-installation 26 years later.

Below is the relocated bridge—with the famous Metropolitan Life Insurance Company tower in the background.



ON NEW YORK'S SKYLINE FOR 26 YEARS

Anaconda Copper Sheathing re-used on new aerial footbridge

THE 6,000 lbs. of Anaconda 20-oz. Cold-rolled Sheet Copper, covering the footbridge connecting the main building and annex of the Metropolitan Life Insurance Company, had been exposed to the moist, corrosive atmosphere of Manhattan Island for more than a quarter century.

The copper had acquired a natural, soft green patina—protecting it from corrosion. Since its installation in 1920 the amount spent for the upkeep of the bridge's copper exterior had been practically nil, according to a maintenance engineer for the buildings.

In 1946, the annex was razed to make way for new construction. At that time, the span was relocated to connect the head offices with another

Metropolitan structure. Inspection showed the copper to be in such excellent condition that it was carefully removed and used to cover the new, relocated bridge—proving, once more, the durability and economy of well-designed copper work. 4709 A



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REQUIRED READING



Meeting house (1775), Jaffrey, N. H.
From "Churches of Old New England"

HISTORIC CHURCHES

Churches of Old New England: Their Architecture and Their Architects, Their Pastors and Their People. By George Francis Marlowe. Photographs by Samuel Chamberlain. New York (60 Fifth Ave.), The Macmillan Co., 1947. 6 by 9 in. xiv+222 pp. illus. \$3.75.

Architect George Francis Marlowe is interested in New England's famous old churches not just as buildings but as expressions of the people who built them and for whom they were planned. A good part of this volume, therefore, is given over to accounts of our Puritan forefathers, who emerge from its pages delightfully less dour than they usually are made to appear.

The churches themselves for the most part are New England meeting houses built during the 17th, 18th and early 19th centuries. Oldest of them is the "Old Ship" at Hingham, Mass., which Mr. Marlowe says is the oldest church building in New England, the oldest wooden one and the oldest in continual use in the United States. Dating back to 1681, it is the only remaining example of the simple square meeting house with pitched roof, small porch and squat belfry; it was carefully restored in 1930 under the supervision of architects Smith and Walker of Boston, and today stands much as originally built.

Shortly before the Revolution the simple meeting house plan began to give way to the more formal church plan, the first such building in Boston of real merit being Christ Church — the "Old North" — famous primarily for its connection with Paul Revere's ride ("one if by land, two if by sea"). This is the oldest church still standing in Boston, built

in 1723, apparently from a design by William Price, cabinet-maker and zealous churchman. The original spire was blown down in a gale in 1804 and replaced by one designed by Charles Bulfinch much like the original.

"A great part of the architectural merit of the churches and other buildings of this period," says Mr. Marlowe, "lies in their nearly perfect adaptability to the materials and methods of construction available to their builders, as much as in any conscious effort in their design. Their architecture is essentially an architecture of wood, or wood and brick. . . . The frames, mostly of oak, of many of the early wooden buildings were put together on the ground, and raised completely assembled." Even some of the wooden steeples were put together on the ground; how they were raised into position with the primitive equipment available, is a matter for speculation.

Architects and builders, pastors and parishioners wander through these pages with a fine informality. Mr. Marlowe quotes frequently from old church records and from diaries of Pepsysian chroniclers such as Samuel Sewall. Squabbles over seating, repeated smashing of windows by prankish schoolboys, furors over pastors who wore wigs, earthquakes, wars — these are some of the incidents that go to make this latest volume by Mr. Marlowe his best to date.

Samuel Chamberlain worked in close collaboration with Mr. Marlowe in the preparation of the book, contributing 54 photos of churches discussed in the text.

HOSPITAL STANDARDS

Appendix A: General Standards of Construction and Equipment under Public Law 725, 79th Congress (Hospital Survey and Construction Act). Available gratis from State Health Depts., State Hospital Agencies, or U. S. Public Health Service.

Reviewed by WILLIAM A. RILEY, A.I.A.,
Member, Federal Technical Committee
on Architectural Standards

Appendix A to the Hospital Survey and Construction Act is now ready in final form and has been submitted to The Federal Hospital Council for approval.

These regulations are not regulations for regulations' sake or intended purely as restrictions. They have a decided mission.

For the first time in our history a coordinated, comprehensive, country-wide hospital and public health construction program has been started. Better hospitals, avoiding construction errors of the past, will be built under it. The applicable standards assure this.

In evaluating Appendix A this broad

purpose should be kept constantly in mind. Further, it should be remembered that in application the regulations are country-wide and have to serve to safeguard public funds.

The standards are minimum requirements for construction and equipment applicable to projects for which federal assistance is requested under the act. In the introduction to the regulations it is stated: "Since these are minimum requirements it is desirable only that they form a basis for development of higher standards. In the interest of promoting the development of higher standards it is the intention of the Public Health Service to make suggestions and disseminate the latest information as to current good practice in planning and design of health facilities. This information will be distributed from time to time to state agencies and other interested persons."

An important point is, therefore, that although the Law is not subject to change the construction regulations are not fixed but may be changed as warranted when any newly established procedure dictates such necessity. Thus there will be extreme flexibility with no tendency to impede progress by jelling thinking along certain fixed lines of hospital construction.

The construction standards as now set up are representative of the extensive experience and knowledge in this field of the U. S. Public Health Service and its consulting technical committee. As minimum ones they are not to conflict with any higher state or other legal standards.

Remembering the application, the essential purpose, broad scope and flexibility of the regulations, and that the best available knowledge has been put into their preparation (and will continue to be applied to their adjustment), it cannot be doubted that the desired accomplishment will be attained.

In summarizing the "General Standards of Construction and Equipment" which are "Appendix A" to the Hospital Act, it may be well to point out their intrinsic value to architects throughout the country whose knowledge of hospital planning is limited. If the regulations are strictly adhered to there will be every assurance of better designed hospitals.

From the viewpoint of a hospital architect with over 20 years of continuous practice in the designing of medical buildings I can state that the minimum standards as a whole are of value to the architectural profession in establishing good hospital standards. The Hospital Facilities Division of the U. S. Public Health Service has conscientiously assisted in the preparation of these general standards with the sole purpose of creating good hospital design and construction and the beginning of a coordinated hospital system for the entire country.

(Continued on page 30)

Lighting Panels that make your eyes light up

Bulldog lighting panelboards combine efficiency with visual appeal to make your eyes light up in appreciation of smart styling and progressive engineering.

BULLDOG SUPERBA PANELBOARDS

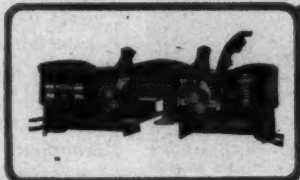
Bulldog's SUPERBA Panelboards meet the combined need for beauty and utility in offices, stores and commercial buildings.

Standard SUPERBA features interlocked fuse doors to provide an added safety factor, since fuses are always "dead" when accessible.

Modified SUPERBA incorporates all advantages of the Standard Model, except that it is intended for installations where *electricians* will replace fuses and, for that reason, does not require interlocked fuse doors.

Both offer the exclusive OMNI-bus feature, permitting balancing of loads without removing the cabinet door or trim, or disturbing wiring connections. Heavy-duty toggle switches, with quick-make and quick-break action, minimize arcing and burning to insure longer life and lower maintenance costs. Cartridge fuse ejectors are integral in the design.

Cutaway view of Standard SUPERBA phenolic unit featuring OMNI-Bus bars, rugged toggle switches, cartridge fuse ejectors—all adding to the appearance and utility of this lighting panel line.



BULLDOG ROCKER TYPE PANELBOARDS

With Bulldog ROCKER-TYPE Panelboards, ruggedness comes first.

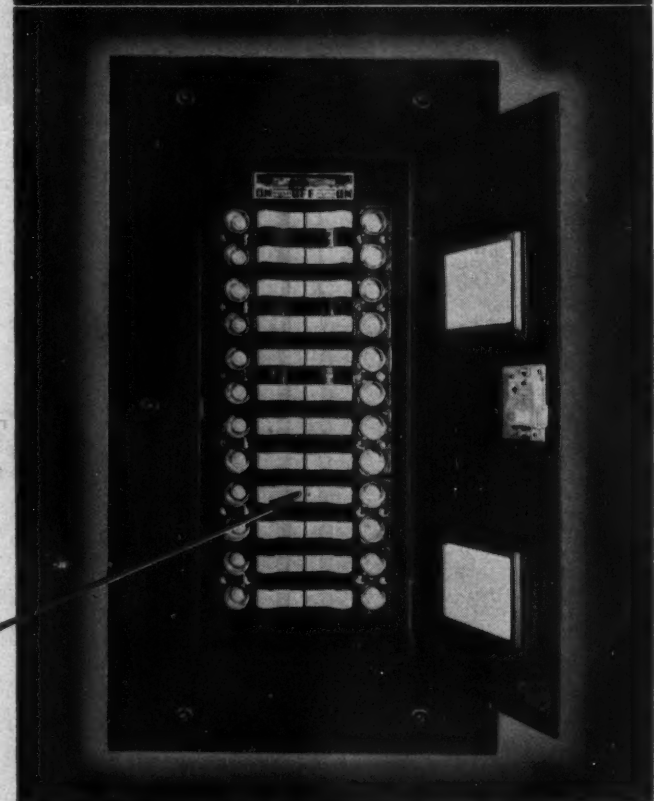
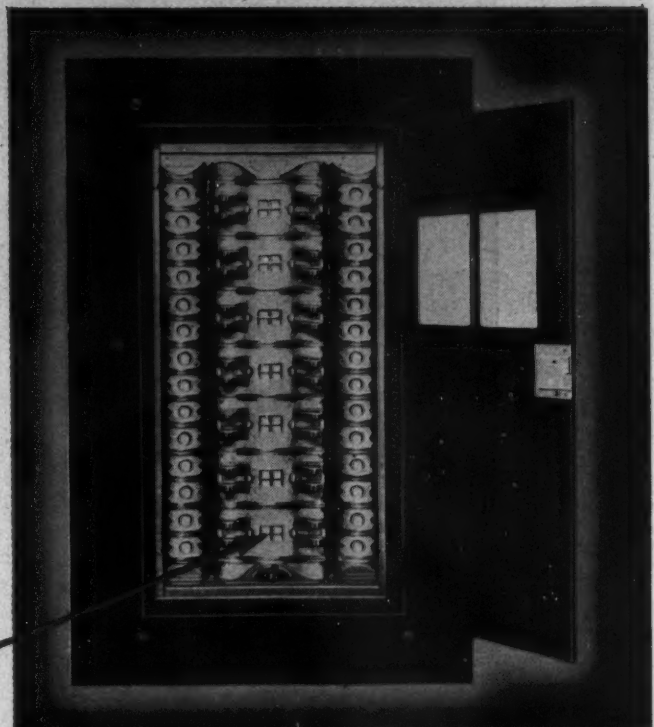
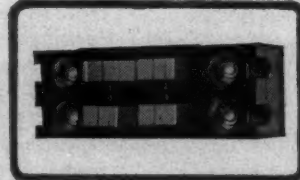
These panelboards are designed particularly for factory use, where appearance is secondary but where circuits are apt to remain under load "around the clock."

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For full information on Bulldog SUPERBA or ROCKER-TYPE lighting panelboards, call your Bulldog Field Engineer. Or, write Bulldog direct for folders.

Cutaway view of ROCKER-TYPE porcelain unit designed for rugged durability, maximum dielectric strength and heat resistance plus simplified switch mechanism with unbreakable rocker handles.



BULLDOG
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Bulldog manufactures Vacu-Break Safety Switches—SoftFuse Panelboards—Superba and Rocker Type Lighting Panels—Switchboards—Circuit Master Breakers—"Lo-X" Feeder BUStrubution DUCT—"Plug-in" Type BUStrubution DUCT—Universal Trol-E-Duct for flexible lighting—Industrial Trol-E-Duct for portable tools, cranes, hoists.

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VALVES—Individual compression valves with arm and shower head.

Cadet

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In Canada—Fiat showers are made in Canada
by The Porcelain and Metal Products, Ltd.,
Orillia, Ontario

REQUIRED READING

(Continued from page 28)

If there is a whole-hearted cooperation among federal, state and local officials, national regional, state and local hospital associations and individual hospital executives, this country will benefit materially in the most comprehensive hospital and public health construction program ever undertaken.

WARTIME BUILDING

American Miracle: The Story of War Construction around the World. By Van Rensselaer Sill. New York 16 (386 Fourth Ave.), The Odyssey Press, Inc., 1947. 6 by 9 in. xvi+302 pp. illus. \$4.00.

Anyone who ever has been even remotely connected with the construction industry will thrill to the story told so factually by Mr. Sill—a story familiar to most of us in general outline, but new and exciting in detail.

This is the story of the \$49 billion construction miracle which men and women, civilians, Navy Seabees and Army Engineers contrived from the dark days of 1940-41 through the second quarter of 1945. It is the tale of the bulldozer, the scraper and paver, of the Alaska highway, of the gigantic war plant, the Pacific air bases, the cantonments, the shipyards, of bombed ports restored to use in incredibly fast time, of repaired railroads and rebuilt bridges. All of it done under the stress of an urgency never before known: "Every job, every war plant, cantonment, shipyard, had to be finished in almost miraculous time—sometimes ten and twenty times faster than normal peacetime construction." War plants went up so fast that "in five years we doubled the productive capacity of the country." On the last lap of the long road to Berlin, American construction men threw up a heavy-duty railroad bridge across the Rhine in ten and a quarter days.

Personalities are kept rigidly out of the story because this is not a book about the few who made the headlines but one concerned with the "little people" who by and large did not. There are surprisingly few exclamation points; facts are allowed to speak for themselves, backed up by a section of war construction reports from various government agencies and another of statistics. When romance creeps in it is not of Mr. Sill's doing: the Army Engineer calmly pipe-laying 500 yards out in front of his own front line, the Seabee driving his dozer over a Jap pillbox at the height of landing operations to put out of commission a twin-mount 37 mm. gun and 12 well-armed Japs, wrote their own romance into Mr. Sill's quiet chronicling.

(Continued on page 126)

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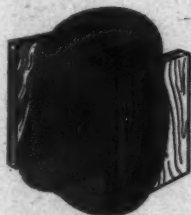
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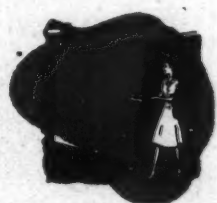


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Use it for table-tops, counters, bar-tops, built-in booths, walls . . . anywhere at all when you want beauty,

convenience and durability combined in one *practical* material.

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* Manufactured by Westinghouse Electric Corporation. Reg. U. S. Pat. Off.

** Reg. U. S. Pat. Off. United States Plywood Corporation

How these four Enterprise Oil Burners Saved a \$40,000 Crop



This unretouched photograph shows four Enterprise Oil Burners as the emergency installation was completed and boilers were first fired. Starting from scratch, with no oil tanks, no material at the location, front plates, refractory materials, etc., the entire installation was ordered and completed in less than four days!

When the Eddington Canning Company in Springfield, Utah, was given 24 hour notice of the discontinuance of their coke oven gas supply, they had \$40,000 worth of peas in various stages of processing. Faced with the possibility of a total crop loss, Eddington officials lost no time in contacting the Enterprise distributor in Salt Lake City—the Power Engineering Company. Steam requirements called for four of the J-2 size oil burners, each with capacity of 70 gallons per hour, which were rush-ordered on a Friday from Enterprise's San Francisco plant. They arrived via air cargo liner Sunday morning, were rushed directly to the job, installed in the boilers, and producing steam by Tuesday noon. Not a dollar of crop was lost.

Aside from meeting the immediate emergency requirements, these heavy duty oil burners will allow the Eddington plant to handle greater volumes than ever before, with no problem of steam shortages. The boilers, suitable for operation at 400 H.P., can now utilize their full horsepower capacity—with burner power to spare.

The speed with which this job was executed, and the high degree of cooperation rendered, are points of service which have led to real customer satisfaction in Enterprise Oil Burner installations throughout the world. Specialized engineering technique applied to any combustion problem is also counted among the many advantages offered by the Enterprise Combustion Division. Write, wire or call when we may be of assistance to you in the solution of *your* particular problems.

ENTERPRISE *Oil Burners*

COMBUSTION EQUIPMENT DIVISION OF
ENTERPRISE ENGINE & FOUNDRY CO.,
18TH AND FLORIDA STREETS
SAN FRANCISCO 10, CALIFORNIA

Distributors in Principal Cities

OIL BURNERS

DIESEL ENGINES

PROCESS MACHINERY

INSTALLATION TIME REDUCED 50% to 80%

With Douglas Fir

PRE-FIT

Stock Doors

Save Time—Save Labor—and
Get a Better Job . . . with
These Improved Fir Doors!

ONE BUILDER reports as many as seven installations in the time previously required for a single door! Savings of from 50% to 80% are common.

That's because Douglas fir stock doors are *pre-fit* to exact size at the factory. They reach the job trimmed and squared, ready to hang. No sawing or planing is required. Precious time is saved—and there's far less danger of on-the-job marring, "butchering" and poor alignment due to unskilled help or improper tools. Corners are clean, trim, true—scuff-stripped for protection. The result: a better, as well as a faster, job!

and PRE-SEALED, too,

for Protection and Better Finish

Douglas fir stock doors—featured in definite, plainly marked grades and a wide range of designs, including modern 3-panel layouts adaptable to all types of building—are also *pre-sealed* at the factory. They reach you fully prepared for a better finish. They're protected against moisture and checking, with resulting improvement in dimensional stability.

MORE FIR DOORS SOON!

It is a fact that Douglas fir doors may continue in short supply for a number of months. Two factors make this true: the present overwhelming demand—and the shortage of essential raw materials. But production IS stepping up. Warehouse and dealer stock should soon reflect this increased production. We suggest that you keep in touch with your regular source of supply.



The National
Association
of Fir Door
Manufacturers



For Even Greater Production
Economies, Specify Fir Doors

"FACTRI-FIT"

Durable, attractive Douglas fir doors may also be ordered completely precision-machined—not only pre-fit and pre-sealed, but gained for hinges and mortised or bored for locks as well. Here again, cleaner, trimmer jobs are assured, because all work is done at the factory by high-speed precision tools. Time savings more than offset the slight additional cost.



No on-the-job
mortising or boring
required!

For Better, Faster Installations, Specify:

Douglas Fir DOORS

FIR DOOR INSTITUTE

Tacoma 2, Washington

Perkins & Will design a factory . . .

Mesker Steel Windows

Philip Will, Jr.
of
Perkins & Will
Architects
Chicago, Ill.



"Modern manufacturing plants owe much of their attractive appearance to intelligent handling of metal windows. As elements of industrial design, their possibilities are unlimited."

For your copy of the Mesker Book of Industrial Windows, write to Mesker Brothers, 4338 Geraldine Ave., St. Louis 15, Mo.

PORCELAIN ENAMEL

Gives Unequalled Freedom

in your use
of
COLOR and SHAPES



For interior or exterior use, Porcelain Enamel accurately interprets your ideas of color and form. Whether you use it for a door-frame or store front; for a kitchen wall or a railroad station—Porcelain Enamel provides qualities and advantages no other material can match. Having the strength of steel, the hardness of glass, the colors of the rainbow and the durability of stone, Porcelain Enamel is economical, practical and attractive.

Send for the new Porcelain Enamel Institute Architectural Brochure. It contains information on architectural uses and possibilities of this material.



For modernizing store fronts, Porcelain Enamel is ideal. Colorful, fresh, appealing, economical, it attracts patrons and increases profits.



PORCELAIN ENAMEL INSTITUTE, INC.

1010 VERMONT AVENUE, N. W. • WASHINGTON 5, D. C.

*As seen
in Color in...*

THE SATURDAY EVENING
POST

● ANOTHER ad in the Gold Bond Campaign. Designed to rekindle the desire that should be first in the hearts of every American family...to own their own home. Judging from previous ads, hundreds of folks will request plans of this house and as usual the answer will be "Consult your local architect!" National Gypsum Company, Buffalo 2, New York.



You'll build or
remodel better with
Gold Bond

You can start building sooner if you start planning now. See your local Gold Bond Dealer!

We call it "Outside Inn"

What! Build an open ranch house in cold Vermont? It sounded crazy until our architect suggested this clever idea. Now we just slide a panel and presto! We have a living room open to the summer breezes. Yet in winter we have a house as snug and easy to heat as any home in all New England...

There are a lot of good ideas for you here if you're planning to build or remodel. But some of the best ones aren't visible in this picture. For example, under the outside finish are wide panels of fireproof Gold Bond Gypsum Sheathing. They give the house greater structural strength and weather-protection because there are fewer joints. And thanks to modern building research, this better Gold Bond

sheathing costs even less than old-style inflammable sheathing!

Inside the sheathing, in between the wall studs, is another big idea for you. It's fireproof Gold Bond Rock Wool insulation that keeps the house warmer in winter and cooler in summer. Cuts heating bills by as much as 40%. Can be "blown" right into the walls and top ceiling of the house you're living in now.

Whether you're building a ranch house or a Cape Cod cottage, the inside walls will be stronger and better-looking if they're built of Gold Bond Gypsum Lath and Plaster, and painted with Gold Bond Sunflex. This wonderful new one-hour wall

paint comes in eleven fresh new colors that help to make any home bright and gay all year round.

Your Gold Bond lumber and building material dealer can now offer you over 150 Gold Bond building products all designed and engineered to help you build or remodel better. Each product is the best you can buy...and it will cost you no more than other materials. The surest way to have these finer, long-lasting materials used in your new home is to ask your architect to specify Gold Bond by name. Your local Gold Bond dealer will be glad to discuss your plans with you. See him first!

NATIONAL GYPSUM COMPANY
BUFFALO 2, NEW YORK

Over 150 tested Gold Bond Building Products for new construction or remodeling add greater permanency, beauty and fire protection. These include wallboard, lath, plaster, lime, sheathing, wall paint, insulation, metal and sound control products.

DEMAND
THESE SIX
GOLD BOND
FEATURES
IN YOUR
NEW HOUSE



Big, weatherproofed panels of Gold Bond Specially Sealed Gypsum Sheathing add structural strength and built-in fire protection. Cooler than old-style sheathing.



Gold Bond Gypsum Lath is the perfect plaster base. Can't warp, expand or contract. Adds fire protection and structural strength for better wall and ceiling construction.



Gold Bond Gypsum Plaster is especially prepared to bond perfectly with gypsum lath. Builds fireproof, rock-like walls and ceilings with greater durability and beauty.



Over the plaster, apply a coat of Gold Bond Finish Lime. This is the smooth white finish that you see in a new house before the wallpaper or paint is applied.



Builds a fireproof blanket of insulation around the house for greater year round comfort, family health, and fuel savings up to 40%. Available for new or old homes.



Does in one hour with an objectional primer, after-color. Easier to apply. This modern preparation is now available at your dealer's in a full range of colorful tones.

Designers put this project
on an
Economical Permanent Footing
with

KOPPERS PRESSURE-CREOSOTED PILES

A common problem—providing a firm, *enduring* foundation in unstable soils—faced the designers of this large industrial building. To solve it, they chose a pile material whose permanence and economy have been conclusively demonstrated in thousands of applications—pressure-creosoted wood.

Koppers Pressure-creosoted piles were driven in the wall trench, and under the floor area. These multiple supports eliminate settling hazards. The treatment gives enduring protection against decay, permitting cut-offs above the water table to be safely made. It also fortifies the piles against insect attack.

The *permanence* of pressure-creosoted piles is demonstrated by the old buildings founded on them . . . and present-day *economy and effectiveness* are indicated by the many modern buildings that use this proven method of overcoming soil handicaps. Koppers Pressure-creosoted piles permit economical development of areas where water tables are below pile cut-offs. They provide adequate bearing value in constructing foundations for heavy bridges or machinery. And they are an accepted means of equalizing support when part of the building is over filled or soft ground.

Koppers is equipped to treat piles up to 125 feet in length, and the delivery situation is excellent. If you have a foundation problem, get in touch with Koppers.



Piles in trench will be capped by wall; others by floor slab.



Reinforcing rods for floor slab. Piles can be seen below.



Floor partially poured. Lower reinforcing is covered.

PRESSURE-TREATED WOOD
KOPPERS COMPANY, INC.
PITTSBURGH 19, PENNSYLVANIA

CLOUDBURST!



HAS YOUR BUILDING THIS WATERFOIL RAINCOAT?

A sudden heavy downpour can cause extensive damage to a building and its contents. To protect a factory, office or institutional building is now a simple process with Waterfoil. Unlike any other masonry coating, Waterfoil consists of inorganic gels which bond both chemically and physically to masonry surfaces. Waterfoil helps impede water penetration into con-

crete, brick and stucco, yet lets the masonry breathe as it must, preventing reinforcing bar rust, spalling, and disintegration. Don't wait for the gale or cloudburst. Write for the important Waterfoil literature now before the damage is done.

Established 1897



50th Year

Free! Your copy of the 50th Anniversary Edition of our 96 page Construction Data Handbook will also be sent upon request—helps solve many construction and maintenance problems. Many valuable facts.

SUBSIDIARY OF



CHEMICAL CORPORATION

WATERFOIL

THE UNIQUE TREATMENT FOR EXTERIOR MASONRY SURFACES

A. C. HORN COMPANY, Inc.

Manufacturers of Materials for Building Maintenance and Construction

43-36 Tenth Street, Long Island City 1, N. Y.

Houston • San Francisco • Chicago • Toronto

Half flights... often make **DOUBLE** sense!

Among today's bright moderns, there's an unwillingness to give up good ideas just because they're different—an insight that finds "double sense" in many ideas which depart from the old, accepted ways. Here's a house that's better because it's different. This is a brilliant little home with a true basement rather than an in-the-ground cellar... a house with hall, dining-room and kitchen at easily accessible ground level, yet with living and sleeping quarters set up half-a-flight to provide more privacy, more light, better ventilation and better view! Here's a house designed for different living!



THIS MAKES SENSE, TOO!

This home is designed for coal heat—one of the most sensible features of the entire plan! Here's why:

1. The man who plans for coal heat builds for the future. Other fuels may be exhausted, but there's enough coal to last thousands of years!

2. Coal heat is even heat. House temperature does not rise and fall as automatic cut-on and cut-off operate. This means that coal heat is healthful heat.

3. Coal heat is economical. Every binful is a sound, dollar-for-dollar investment!

"Fuel Satisfaction" is the choice of millions of smart home owners. "Fuel Satisfaction" is the superior, all-purpose bituminous coal mined along the Norfolk and Western.

Norfolk and Western Railway

CARRIER OF FUEL SATISFACTION

ASBESTOS IN ACTION



Fire-resistant construction
PLUS architectural freedom...

WITH K&M

"Century" ASBESTOS - CEMENT SIDING

Judicious blending of "Century" Asbestos-Cement Siding with stone masonry gives charm and permanence to this home.

With "Century" Asbestos-Cement Siding you can offer your clients all the advantages of the popular shingle design. And you can throw in a great big PLUS: a siding that is completely fire-proof.

Being made of asbestos-cement, "Century" Siding is not only fire-proof... it is rot-proof, rust-proof, termite-proof. And it actually grows tougher with age.

You can specify "Century" Asbestos-Cement Siding in gleaming shell white made from special white pigment... or in graytone for a toned-down effect. Your client will never have to paint "Century" Siding for protective reasons.

You'll find "Century" Siding's large 24" size makes for easy, economical application. Any builder can apply it without special tools or skills. Write us for further details... we'll answer your inquiry promptly.

*Original manufacturers of asbestos-cement
roofing shingles in this country.*



Reg. U. S. Pat. Off.

KEASBEY & MATTISON
COMPANY • AMBLER • PENNSYLVANIA



*The Beauty's
not all on
the Surface...*

When it carries the  *Name*

Yes, sir, that surface range outlet's a beauty from the outside, but just take a look at the inside. There's real beauty there, from every point of view — the kind of beauty that means a contractor doesn't have to hire a contortionist to install it — the kind of beauty that means years of client satisfaction. Those are the things you expect — and get — in wiring devices that carry the General Electric name.

Of course, it's the smart exterior that makes clients want it. One glance at this good-looking outlet and the mention of General Electric, and they go for it. But, be sure to convince yourself, too. See for yourself that there's nothing half-way about it. Notice that you can lead in from bottom or rear. Look at its sound construction and the provision for fourth-wire ground. You'll agree that it's a beauty, too. Its number is GE3000. Its name is General Electric — the name that convinces your clients — the name that gives you confidence in your choice of wiring devices.

Ask your distributor about the GE3000 and the rest of the work-saving line of General Electric wiring devices.

WIRING DEVICES by
GENERAL  ELECTRIC

Wiring Briefs from your G-E Distributors

Do you know the interesting features that help make General Electric wiring devices easy to use and safe to specify? Do you know the wide variety of items in this full line? For useful facts and interesting bits of information, keep posted on this column. It's designed to help you learn more about the General Electric line.

Remember the stories about the *little man* who turns off the light in the refrigerator? The one about General Electric Watch Dog* fluorescent starters is even better, because it's true. Here's part of the story: a Watch Dog starts a lamp just like any other high-quality starter. But, once it's in operation, it stands guard, watching for any indication of lamp flicker. When a lamp begins to flicker, the Watch Dog starter turns it out — saves circuits and ballasts, outlasts other starters 5 to 1. For the rest of the story, ask any General Electric merchandise distributor.



Brutal is the word for most methods of hanging clocks and fans. But General Electric clock and fan hangers end all that. They're flush hangers that support fans and clocks with no extra work or damage to walls. Fan hanger outlet fastens readily to fixture stud in outlet box for sturdy support. Handy clip on plate of clock hanger outlet gives invisible support to wall clocks.



Surface wiring used to be the ugly step-child, but you'll be surprised at how neat and good-looking it's grown. Convince yourself with General Electric's new folder on surface wiring devices. For your free copy, write to Section D74-95, General Electric Company, Bridgeport 2, Connecticut.

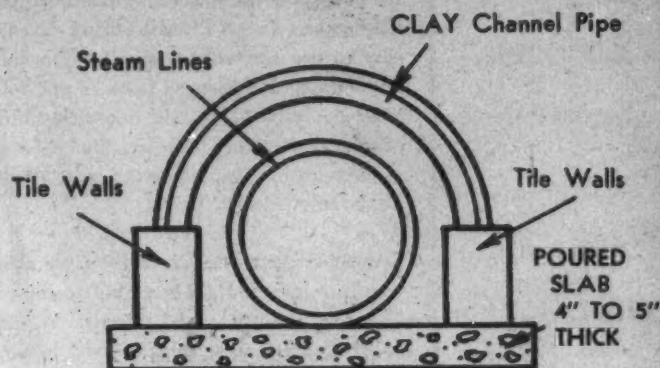


*Trade-mark Reg. U. S. Pat. Off.

Say "G.E." and he'll agree.

ENGINEERS DISCOVER NEW USES

FOR CLAY PIPE



CLAY CHANNEL PIPE TUNNEL PROTECTS UNDERGROUND LINES

Cross-sectional diagram shows how engineers of the Birmingham Electric Company in Birmingham, Alabama use Clay Channel Pipe to protect and insulate underground steam lines. Chemical-resistant Clay Channel Pipe is grouted with mortar to structural tile sidewalls set on a poured base. This forms a "tunnel" for the magnesium-jacketed steam lines. The Clay Pipe offers good protection against the dampness of the earth, and it can easily be removed to provide quick access for repair or inspection of the steam lines. Such excellent results have been obtained that Birmingham Electric plans another similar installation of 2800 feet of Clay Pipe.



THE same durability and corrosion-resistance that have made Clay Pipe the traditional material for all types of sewerage installations is winning wide approval in solving new and different problems. Engineers find Clay Pipe ideal insulation and protection for underground steam lines. Also, Clay Pipe is being used throughout the chemical industry to carry fluids that would soon destroy most other pipes. Clay Pipe is an economical and

durable material for ducts that carry off strong industrial fumes. Clay Pipe is especially useful for drainage of modern highways and airports where heavy loads must be supported safely. For information about your Clay Pipe problems, write to the nearest regional office listed below.

NATIONAL CLAY PIPE MANUFACTURERS, INC.

111 W. Washington St., Chicago 2, Ill.
522 First National Bank Bldg., Atlanta 3, Ga.
1105 Huntington Bank Bldg., Columbus 15, Ohio
703 Ninth and Hill Bldg., Los Angeles 15, Calif.

C-47-4





TALLY HO
RESTAURANT
Evanston, Ill.
C. W. JOHNSON, INC.
Heating Contractor
MAHER & MCGREW
Architects

For LUXURIOUS DESIGN and GREATER COMFORT

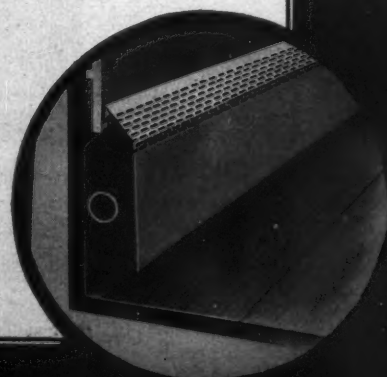
Vulcan Baseboard Radiation . . . the popular Radi-Vector . . . is designed to blend in smoothly with any type of room, large or small. Recessed along the baseboard it allows unlimited freedom for smart, interior decorative schemes and arrangement of furniture. Vulcan always assures the delightful, draft-free comfort of uniform heat throughout. When installed beneath a large glassed-in area it permits full enjoyment of bay or low picture-type window.

Light in weight and requiring few fittings and supports, it is easily installed . . . comes cut to any desired length.

For more than twenty years the name Vulcan has meant dependable heating.

There is only one Vulcan.

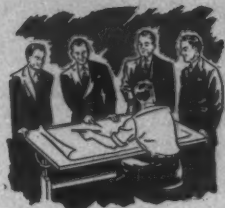
Representatives in principal cities.



THE VULCAN RADIATOR CO.

26 FRANCIS AVENUE, HARTFORD 6, CONN.
RADIATOR MANUFACTURERS FOR OVER TWO DECADES

The PLANNING BOARD



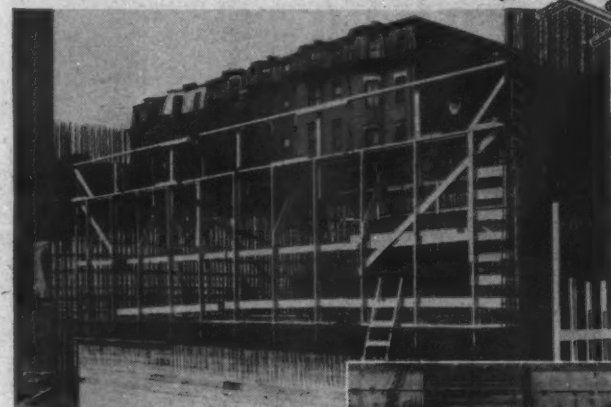
The Truscon Planning Board Says, "Normal delivery on many of our Steel Building Products is now possible. In fact, on all material for which raw

material is readily available, a normal rate of production and delivery is currently in effect." However, since production and delivery schedules change from week to week, we suggest you contact the nearest Truscon sales office for the latest information.

109 Tons of Truscon Welded Bank Vault Reinforcing in this job

When completed, the new John Hancock Mutual Life Insurance Company Office Building will be one of the most beautiful commercial buildings in Boston, Mass. And behind that handsome exterior will be a great measure of fortified strength to guard the physical and financial assets of the company. The bank vault in the John Hancock struc-

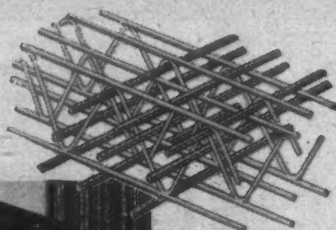
ture is a masterpiece of design in impregnable strength. It required 109 tons of Truscon Welded Bank Vault Reinforcing to build this unusual part of the building. Contrary to the general run of vaults, the John Hancock vault extends from the sub basement floor through the basement to the first floor. This required that the bank vault walls act as supporting walls for the basement and first floors in that particular part of the building. The dual need for structural strength and vault protection was met adequately by the distinctive design of Truscon Welded Bank Vault Reinforcing.



Where protection against unauthorized entry into a single room or an entire structure is paramount, use Truscon Welded Bank Vault Reinforcing. It assures maximum economy in the placing of construction materials, maximum efficiency of materials in resisting

1200 Tons of Truscon Concrete Reinforcing Bars Also Used

The details of the foundations for the new John Hancock Life Insurance Company building also are interesting. Truscon furnished 1,200 tons of concrete Reinforcing Bars for the foundation slab and foundation walls. The foundation measures approximately 250 feet along each of the four walls. The foundation slab is 10 feet thick, supported on H piles. Some of these piles extend 120 feet below the bottom of the slab, to fill the requirement for resting on solid rock. The foundation walls are approximately 30 feet high. The 10 feet thick foundation slab is reinforced with 1 1/4" square bars both ways



Truscon Welded Bank Vault Reinforcing as used in the John Hancock Life Insurance Co., Building, Boston Mass. Cram & Ferguson, Architects, Turner Construction Co., Builders.

Truscon Concrete Reinforcing Bar as used in the Heavy Foundation of the John Hancock Life Insurance Co., Building.



top and bottom, spaced on an average of approximately 10" on center.

Truscon Steel Bars for reinforcing are applicable to a wide range of concrete work, such as concrete slabs, beams and girders, columns, walls, and footings; in the construction of buildings, bridges, tanks, and all other concrete structures subject to tension and compression stresses. Write for details.

Residential Steel Casements

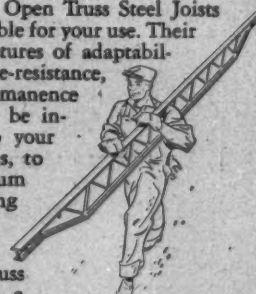
In rooms where windows are opened and closed frequently or where ventilation needs are great and varied, Truscon Residence Steel Casements fill a utilitarian need in addition to being decorative. Side hinged casements can be opened to a position that will invite or retard the flow of air as desired. High, small or unusually placed window openings all become more useful and attractive when fitted with Steel Casements. Screens and storm sash are available at reasonable prices. Write for details.



Early in the 60's of the last century, Monier, a French gardener, conceived the novel idea of making flower pots and basins out of cement mortar embedded with wire, in order to increase the strength and simultaneously decrease the thickness and consequently the overall weight of the containers. To F. Joseph Monier, sometimes called the father of reinforced concrete, is given the credit for the invention of this comparatively new form of construction, probably because the patent issued him in 1865 constituted the first officially recorded endeavor involving the principle of reinforcing concrete.

Prompt Delivery on Steel Joists

Truscon "O-T" Open Truss Steel Joists are again available for your use. Their outstanding features of adaptability, economy, fire-resistance, safety and permanence can once more be incorporated into your building plans, to provide maximum values in building construction.



The Truscon "O-T" Open Truss Steel Joist is a

Warren truss having top and bottom chords of wide tee-shaped members and a plain round continuous web member. The bottom chord is continuous from end to end of joist and bent up at the ends to form the bearings. The underslung design of the bearing permits maximum head-room under the supporting girders. The open web allows the passage of pipes and conduits in any direction. Write for full details.

New Literature

A new 32 page catalog on Truscon's complete line of steel doors is now available. Includes illustrations, installation details and specifications. Write for your copy today.



TRUSCON
STEEL COMPANY
YOUNGSTOWN 1, OHIO
Subsidiary of Republic Steel Corporation

When your plans include an ORGAN INSTALLATION

*You'll find this Reference Manual most
helpful and informative. A copy is yours
for the asking!*

A 16-page brochure covering features you must look
for in any organ you specify; organ nomenclature;
American Guild of Organists' playing specifications;
relationship of tone, space and cost; acoustics; pipe
organ vs. electronic organ; essential and auxiliary
equipment; installation requirements and techniques.

IMPORTANT FACTS ON
Organs
AND THEIR INSTALLATION

THE WURLITZER ORGAN SERIES 20 TWO MAN

consider the TONE
FACTOR as majestically
portrayed by the

WURLITZER ORGAN

Series 20 Two Manual

● For many centuries, profound music has found its highest expression in the organ. Yet for reasons involving space and cost the widespread installation of organs has been greatly limited. It remained for the Wurlitzer Organ, by wedding the science of electronics to principles which are the basis of pipe organ tone production, to bring the majesty of traditional organ music within the reach of all.

The source of tone in the Wurlitzer Organ is the wind-activated free reed, producing a richly varied wealth of electrical impulses. Electronics then select, modify and translate these impulses into perfectly proportioned organ voices, without the use of space-consuming blowers, organ chambers, relay rooms, huge pipes and the like. Thus, the Wurlitzer Organ performs as a pipe organ but, in keeping with modern engineering standards, it does so with amazing economies in both space and cost.

Architects are learning that with the Wurlitzer Organ they can interpret these economies in terms of extra facilities within the building and faster acceptance of their plans.

Organ Division

THE RUDOLPH WURLITZER CO.
North Tonawanda, New York.

SPECIFY WITH CONFIDENCE THE
WURLITZER ORGAN IN...



churches



chapels



mortuaries



concert halls



homes



universities



schools



hospitals

institutions

THE RUDOLPH WURLITZER CO.
N. Tonawanda N. Y., Dept. AR9.

Gentlemen:

Please send me, without obligation, your 16-page Reference Manual... "Important Facts On Organs And Their Installation."

Name.....

Company.....

Address.....

City..... Zone..... State.....

Electro. AIRMAT

...the filter that
always functions—
effectively



MODERN, high efficiency electronic precipitation plus the safety factor of dependable mechanical air filtration—you get both in the Electro-Airmat to insure "around the clock" protection against dust infiltration.

There's no need for secondary filters with an Electro-Airmat on the job. Power failure, while making the electronic function inoperative, doesn't paralyze this unit because the Airmat paper serving as the filtering media carries on as a straight mechanical filter. Also eliminated is the danger of dust infiltration due to "stack effect"—a condition common to multi-story buildings which causes air to flow through ducts after the fan has stopped.

Only Electro-Airmat offers you highest efficiency in the removal of smoke and dust particles plus the positive protection of continuous operation. This and other Electro-Airmat advantages, such as simplified installation and maintenance, are described fully in AAF Bulletin No. 253. Write for it today.

AMERICAN AIR FILTER CO., INC.

389 Central Ave., Louisville 8, Ky.

In Canada: Darling Bros. Ltd., Montreal, P. Q.

AAF

ELECTRO-AIRMAT
ELECTRONIC AIR FILTER

PRESS THUMB

it's open

RELEASE.... and the lead is locked tight!



It's the patented collet in

A.W. FABER-CASTELL

LOCKTITE

which makes it 7 ways better
than any refill pencil you ever used.....

Non-Slippage

The same precision collet holds the lead in a bulldog grip. The lead positively cannot slide back into the holder.

Sturdy

Fine quality plastic and metal used in every part. Exposed metal parts are gold-plated. All expertly assembled.

Quick

Just press your thumb on the button to release clutch. Does away with two-handed screwing or turning operation.

Clean

One hand operation. No need to touch the lead. Hold lead to paper, press button release and adjust length you desire by quick upward or downward movement of your hand. Thus you avoid getting graphite on your fingers to smudge your drawing.

Balanced

Every part is precisely proportioned, giving you a writing instrument which is perfectly balanced in your hand.

Guaranteed

If your LOCKTITE fails to give you perfect performance, return it to your Dealer or to us for immediate exchange.

No Breakage

An exclusive collet, machined to a thousandth of an inch tolerance, supports the graded lead all around. Prevents breaking or snapping even when you bear down hard.

A.W. FABER-CASTELL
PENCIL COMPANY INC. NEWARK, N.J.

Designed by Architects Holabird and Root, this 11-story unit of Illinois Bell Telephone Co.'s long distance switching center (already the world's largest) will house intricate, costly equipment. Insulux will provide daylight, the insulation necessary for economical air conditioning, and help block out dust and dirt in this structure planned to be built at Clark and Congress Streets, Chicago, Illinois.



OWENS-ILLINOIS
INSULUX
GLASS BLOCK



Insulux Glass Block is a functional building material, designed to do many things other materials cannot do. Investigate!

Glass block daylights unique building

WITH an ease approaching magic, myriad calls from all parts of the world will pass through this unit of Illinois Bell Telephone Co.'s long distance switching center.

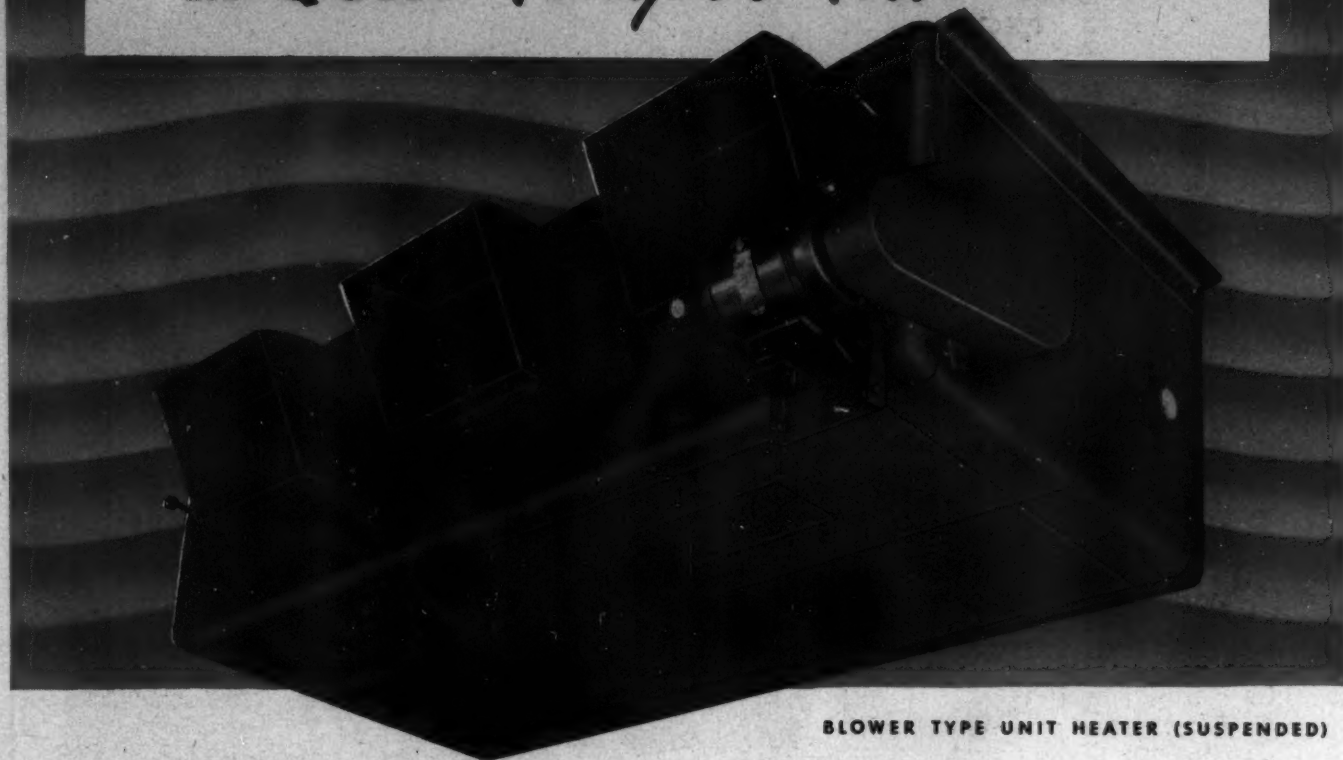
The building and its equipment—representing ten million dollars—have been carefully designed for smooth operation and economical maintenance. One note-worthy bit of planning by Architects Holabird and Root was the selection of Insulux Glass Block.

Insulux panels will not only bring in light, but provide good insulation. The result is lower cost air conditioning and heating operations.

Maintenance, too, is less costly with Insulux. The panels are not subject to rust, rot or corrosion. Infrequent washing keeps them sparkling. No painting is required.

Frequently Insulux Glass Block can make important contributions to efficiency while protecting processes and equipment in industrial and commercial buildings. For complete information write Insulux Products Division, Owens-Illinois Glass Company, Dept. D-8, Toledo 1, Ohio.

HOT SPOTS ARE OUT WITH McQUAY *Temper-Flo* HEAT



BLOWER TYPE UNIT HEATER (SUSPENDED)

Automatic by-pass puts room heat back to work!

Smooth, even heat distribution over large areas is a feature of McQuay blower type unit heaters. Automatic controls recirculate varying amounts of room air through the blower section, bypassing the heating coil. The resulting mixture of air at room temperature and heated air produces a tempered flow of heat that keeps uncomfortable "hot spots" from developing. Keeps temperatures more uniform over the entire area.

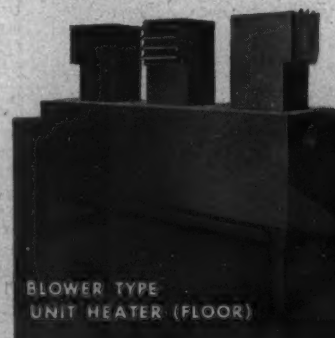
Basic in McQuay blower heaters is the famous Ripple Fin Coil with tubes hydraulically expanded into wide spun fin collars. Permanent metal-to-metal contact

between primary and secondary surfaces plus greater area of contact are Ripple Fin exclusives that mean high heat transfer efficiency.

McQuay blower type unit heaters are available now for floor, or suspended installations with standard or "non-freeze" coils. See your McQuay representative today or write McQuay, Inc., 1605 Broadway Street N. E., Minneapolis 13.

Representatives in Principal Cities

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BLOWER TYPE
UNIT HEATER (FLOOR)

McQuay

EVERY PHASE OF AIR CONDITIONING



Everybody



4222 PRISCILLA.
Note self-adjusting
latch mechanism.

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4223 CENTURY

Full-hand and knob pulls to match, in contrasting or matching colors.

LIKES THIS NEW CABINET HARDWARE



ARCHITECTS . . . because it offers beauty, practical utility.



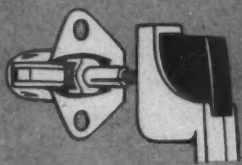
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DEALERS . . . because it is a clean, fast-moving line.



MRS. PUBLIC . . . because it's just what she has always wanted—in fact she helped design it.



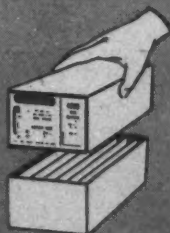
SELF-ADJUSTING LATCH. New "Trigger" latch design . . . automatically adjustable to doors from 3/4-in. to 1 1/8-in.



5-KNUCKLE HINGES. Five knuckles for strength. Raised barrel permits door to open full 180°.



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A nation-wide consumer survey dictated the styling. Years of research produced the strong pressure-cast rust-proof alloys that guarantee lasting beauty. Careful engineering developed its numerous easy-installation features.

Everybody likes this new Stanley Cabinet Hardware for BOTH new cabinets and replacements. It sells itself! Write for full information.

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STANLEY

Trade Mark



7 ways
GE LAMPS
Make a Living Room Livable

This living room is a laboratory for architects. It abounds in new, practical lighting ideas. Into this room are gathered an array of modern light sources which can be used singly or in combination to create atmospheres of comfortable living. Here, in the G-E Lighting Institute Horizon House, architects may study new uses for G-E Lamps, fluorescent and filament, for easier seeing and for decoration.

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2. G-E Slimline lamps in coves along side walls bathe the ceiling with cool over-all lighting.
3. G-E projector spotlamps and floodlamps are recessed in the ceiling at strategic points to provide both concentrated downlight and dramatic highlighting for furniture groups.
4. G-E Fluorescent lamps in door and window valances add light, glamour and loveliness.
5. The soffit above the sofa contains two rows of G-E Slimline lamps to provide flexible and comfortable reading light.
6. Bookcase lighting is supplied by G-E Slimline lamps placed vertically within side trim.
7. G-E Circline lamps are used in the wall brackets. They are shielded by pleasing and decorative glass.

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Stay Brighter Longer!

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 GENERAL **GE** ELECTRIC

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No Mystery—



Bulletin No. B 813

Axial Fans

Vaneaxial and Tubeaxial Fans for heating, ventilating, process work and other air handling needs. This bulletin gives complete details on construction, component parts and installation of both fans together with all necessary tables and data. Also friction and duct sizing charts.

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This method of comfort cooling by means of nature-conditioned air has been widely accepted by architects and owners as an ideal means for attaining low-cost hot-weather comfort. This 4-page bulletin contains complete data on the equipment necessary to do a highly satisfactory job in any home.



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No Magic—



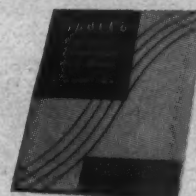
Bulletin No. 5917

Industrial Heaters

For factories, garages, hangars, warehouses, machine shops and other difficult heating jobs. Seven sizes—79,000 to 1,630,000 BTU per hour. Four arrangements—for wall, horizontal, inverted, and floor installation. Bulletin contains all the data necessary to figure even the most difficult heating problems.

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Bulletin No. 3623

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Bulletin No. 1810

Type V Fans (with Cast Iron Housings)

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This compact, complete unit whisks out odors, greasy fumes, smoke. Keeps kitchens fresh as a daisy. Reasonably priced, easy to install, economical to operate. Also ideal for bathrooms, bedrooms, nurseries, laundries, recreation and utility rooms, small stores and offices.



Bulletin No. 2314

Just facts for architects!



Bulletin No. 2814

Utility Sets

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WEIGH THESE ADVANTAGES OF HAZARD Type RH ALUMINUM BUILDING WIRE



EVEN though Type RH Performite heat-resisting insulation — standard for Hazard Aluminum Building Wire is superior to Type R Code-Grade insulation, so widely used on copper conductors, its higher cost is more than offset by the low cost of the aluminum, which goes three times as far as copper on a weight basis. Further savings can be made in handling and installation costs, too, because coils and loaded reels weigh less, and wire requires less pulling effort.

PROVED IN SERVICE — More than 1½ million miles of aluminum electrical transmission cable have been installed in a period of over half a century. Bare aluminum conductors have thus been proved in service under all kinds of exposure on overhead lines. Some installations of insulated aluminum conductors have been in use for nearly as long. Insulated aluminum conductors are being used not only for building wire but also for underground, bore hole, aerial and entrance cables.

FULLY APPROVED — For many years the National Electrical Code has permitted the use of aluminum for electrical conductors. The Underwriters' Laboratories, Inc. have approved

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PROMPT SHIPMENT — Hazard Performite Type RH Aluminum Building Wire is carried in factory stock — and by many wholesalers — for immediate shipment, in sizes 6 Awg to 750,000 CM. Other sizes and cable designs can be fabricated in as little as 4 to 6 weeks. Hazard Insulated Wire Works, Division of The Okonite Company, Wilkes-Barre, Pennsylvania.

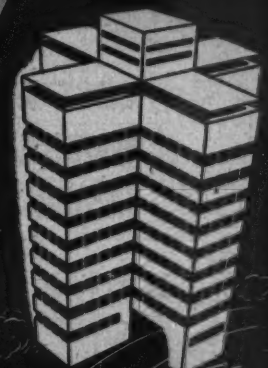
Write for Bulletin H-407-AL which contains tables, calculating data and details of simple splicing and terminating methods.



HAZARD

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Year after Year-



--- Washable "TONTINE"*

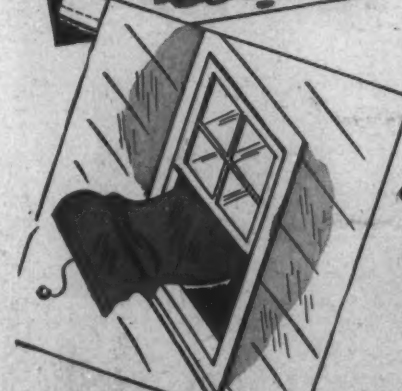
Shade Cloth Stands the Wear!

HERE'S WHY "TONTINE" SHADE CLOTH
OFTEN GIVES UP TO 20 YEARS' SERVICE

◆ Deep into the fibers of the fabric, the pyroxylin is driven. This chemical—a liquid form of cotton—is soaked up by the cotton fabric as a sponge soaks up water, then it hardens. Thus the two become, in effect, one material.



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An economical washing and repairing service can be arranged by your authorized "Tontine" dealer. The shades will look bright, clean, and new. E. I. du Pont de Nemours & Co. (Inc.), "Tontine" Sales, Newburgh, N. Y.

"TONTINE" is Du Pont's registered trade mark for its pyroxylin-impregnated washable window shade cloth.

DU PONT "TONTINE"

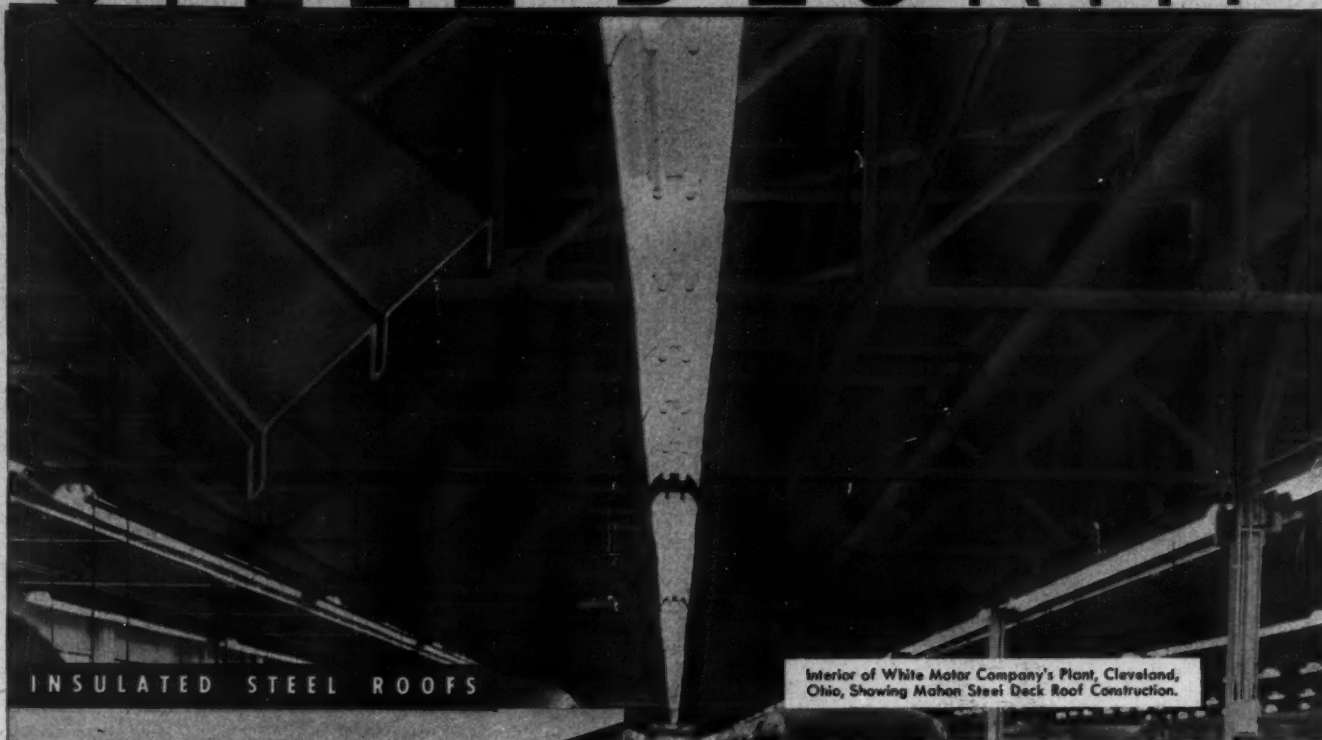
WINDOW SHADE CLOTH

Looks Better Longer



BETTER THINGS FOR BETTER LIVING
... THROUGH CHEMISTRY

STEEL DECK . . .



INSULATED STEEL ROOFS

Interior of White Motor Company's Plant, Cleveland, Ohio, Showing Mahon Steel Deck Roof Construction.



INSULATED STEEL WALLS



Views of White Motor Company's Plant showing Exterior and Interior of Mahon Insulated Steel Wall Construction. Standard Mahon Steel Deck Plates are used in this Application.

for ROOFS, EXTERIOR WALLS and PARTITIONS

Today many industrial plants, power houses, and other industrial and commercial buildings are being built with Mahon Steel Deck Roofs, Exterior Sidewalls and Partitions. The new addition to the White Motor plant in Cleveland, illustrated here, is an excellent example of practical application in modern construction . . . Mahon Insulated Exterior Steel Walls, with a heat transmission coefficient "U" of 0.15, were used throughout. Mahon Steel Deck covers the entire roof area. If you are not thoroughly familiar with these new construction methods, get complete information today. See Mahon Steel Deck Insert in Sweet's File, or call in a Mahon representative. You will find that Mahon Steel Deck, due to its basic design, lends itself to a broader range of uses in modern construction.

THE R. C. MAHON COMPANY

HOME OFFICE and PLANT, Detroit 11, Michigan • WESTERN SALES DIVISION, Chicago 4, Illinois

Representatives in all Principal Cities

Manufacturers of Steel Deck for Roofs, Sidewalls, Ceilings, Floors, Partitions and Doors. Also, Roof Sumps and Recesses, Rolling Steel Doors, Grilles, and Underwriters' Labeled Rolling Steel Doors and Fire Shutters.

MAHON



SIMPLIFIES PLANNING AND CONSTRUCTION

In the Leaman Apartments, 3181 West Broad Street, Columbus, Ohio, 8 Janitrol Gas-Fired Winter Air Conditioners heat 8 apartments conveniently, comfortably, economically. Full year's gas bills for both heating and cooking averaged only \$39.91* for each apartment. Each unit consists of living room, dinette, kitchen, bath, and two bedrooms . . . tenant pays his own gas bill . . . hot water is supplied by the management.

Check these advantages:

INDIVIDUAL TEMPERATURE CONTROL.

Each apartment resident regulates his own Janitrol to suit himself. Automatic controls keep temperature constant.

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SIMPLIFIES PLANNING OF BUILDING.

Furnace and fuel storage rooms are eliminated. Construction is simplified, space which would be used for ductwork is conserved.

LESS WORK FOR CUSTODIAN. No coal, no ashes, no furnace-fixing.

There are many similar successful Janitrol installations of this same type. Write for full information and performance data on this modern heating method. *Surface Combustion Corporation, Toledo 1, Ohio.*

*Natural Gas Average Rate—56 cents per 1000 cubic ft.

Janitrol

**GAS-FIRED
HEATING EQUIPMENT**



Winter Air Conditioner



Gravity Furnace



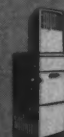
Conversion Burner



Unit Heater

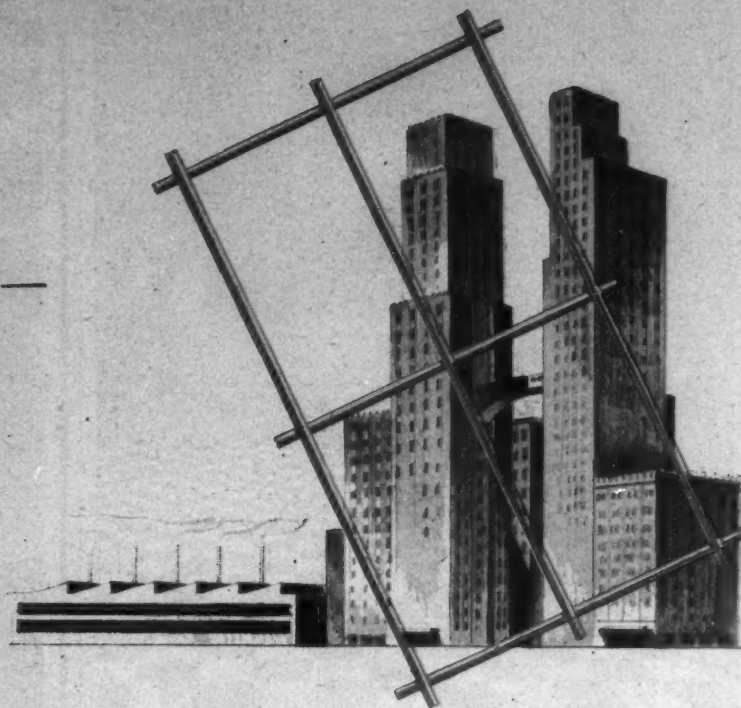


Boiler



Floor Type Blower Unit

For the best reinforcement —
at the lowest cost



Specify American Welded Wire Fabric

● With American Welded Wire Fabric, many closely spaced high strength steel wires fortify wall, floor and roof slabs against shocks, stresses and strains in all directions.

American Welded Wire Fabric comes to the job in rolls or sheets, needs no assembling, is easily handled, lies flat and stays put. You use less steel, less concrete, with American Welded Wire Fabric. You save time on construction and money on labor. So you keep costs down to rock bottom.

You get the most widely used prefabricated reinforcement, made by the world's largest producer when you specify U·S·S American Welded Wire Fabric.



American Steel & Wire Company

Cleveland, Chicago and New York

Columbia Steel Company, San Francisco, Pacific Coast Distributors

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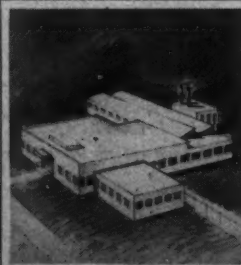
Southern Distributors

United States Steel Export Company, New York

UNITED STATES STEEL



Every type of concrete construction needs American Welded Wire Fabric reinforcement.



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SMALL HOMES



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SKYSCRAPERS



HOSPITALS



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"Dependability" is one of those intangibles that comes from good character, fine quality and long experience. It is something worthy of trust—something to count on when you need it most.

Hood Rubber Tile has dependability. When you specify "Hood" you can depend on it for appearance, quality and wear. You can trust it for permanence of color and resilience. You can always count on it to look better, wear better and be better.

B. F. Goodrich leadership in research plus Hood excellence of manufacture provides the kind of dependability in finer resilient flooring that is assured by the architect's recommendation.

See Sweet's Architectural File for specifications.



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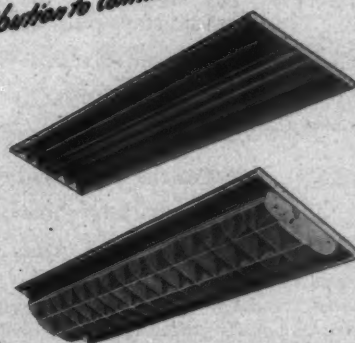
CEILING OUTLETS

*Keyed to Modern Architectural Concepts....
A Vital Contribution to Continuity of Design....*

Available for
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Model "LS" LINE-O-FLO,
the basic unit, made in 3
styles to accommodate any
installation arrangement.

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M21118 DAY-BRITE
lighting unit (made by
Day-brite Lighting, Inc.,
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A NEW APPROACH TO AIR DISTRIBUTION

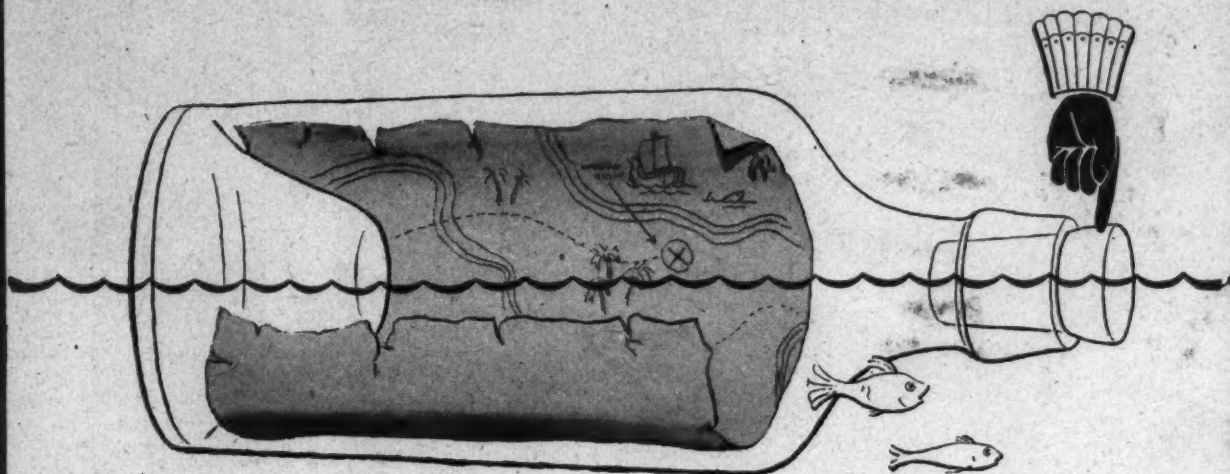
LINE-O-FLO air distribution outlets can be used singly, or end-to-end in continuous strips. Units are constructed of scientifically-designed, rolled-steel members, with orifices simulating Venturi throats having carefully-engineered bell mouth approaches. This outlet has high diffusion efficiency. Room air is rapidly induced into the primary air stream to quickly equalize the temperature differential. Write today for a copy of Bulletin F-2741 giving descriptive and engineering data. Your Barber-Colman representative can show you a sample unit and discuss details.



BARBER-COLMAN COMPANY
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*The bottle floats for years,
because the cork keeps water out.*

*The much-storied bottle messages would have remained
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Koppers built-up roofing also with-

stands the sweltering rays of summer sun without damage. The property of "cold-flow" which Koppers roofs have, causes these roofs to heal themselves whenever small cracks do appear due to the settling of the building or other cause.

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PITTSBURGH 19, PA.

Naturally, a Koppers roof for long life



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& WATERPROOFING**

*Refer to your Sweet's Catalog or
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That's one reason why so many architects prefer Tile-Tex Asphalt Tile®—because it gives them more design freedom in creating correct floors for the interiors of buildings. This is particularly true in retail stores, where modern merchandising requires floors of appropriate design.

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Tile-Tex does more than give the architect design freedom. It gives his client a long-wearing durable floor—easy to clean and keep clean—resistant to stains and scars. Its smooth, tread-easy surface is comfortable to both customers and store employees.

Our experience in planning individualized floors for merchandising areas may be of some value to you at some time. We would appreciate the opportunity to help you.

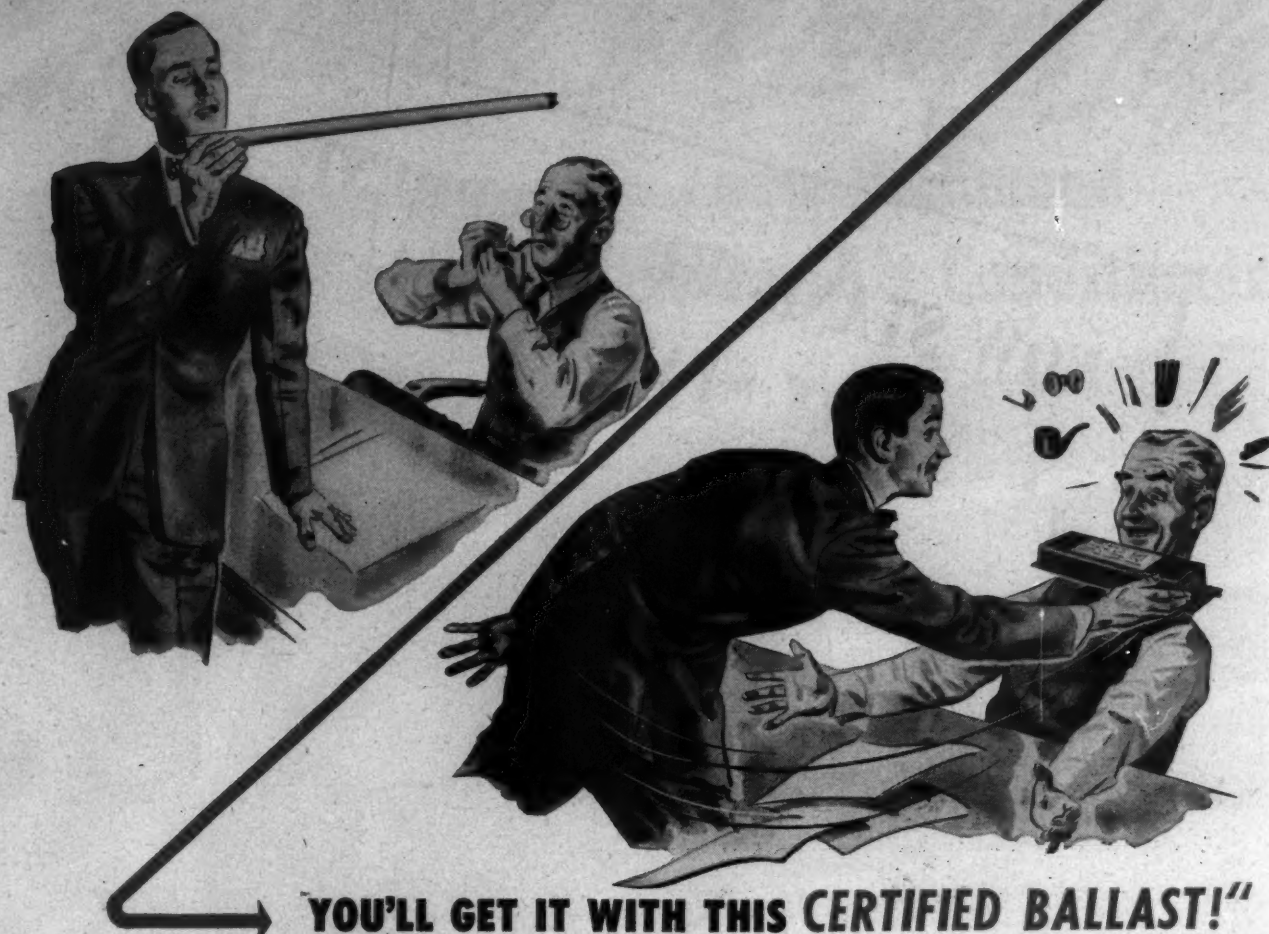
The Tile-Tex Co., Inc., Chicago Heights, Ill. Sales Offices: Chicago, New York, Los Angeles and New Orleans.



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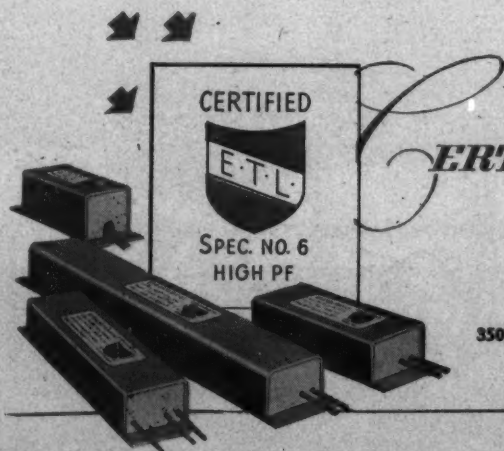
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temperatures, most light and longer life from fluorescent lamps. Famous Electrical Testing Laboratories, Inc. test, check and re-check CERTIFIED BALLASTS against these specifications . . . give it the ETL mark of approval. Insist on CERTIFIED BALLASTS in the fluorescent lighting equipment you sell . . . give your customers the protection they need and want.

CERTIFIED FLEUR-O-LIER MANUFACTURERS, RLM STANDARDS INSTITUTE and CERTIFIED LAMP MAKERS have solved their ballast problems by writing CERTIFIED BALLASTS into their specifications.



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Makers of Certified Ballasts for Fluorescent Lighting Fixtures

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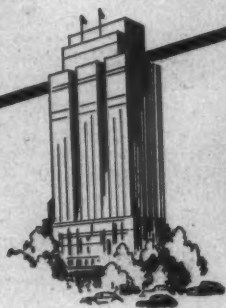
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A turn of the lever gives
Needle Spray for Stimulation.



or *Regulay Spray*
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or *Flood Spray* for
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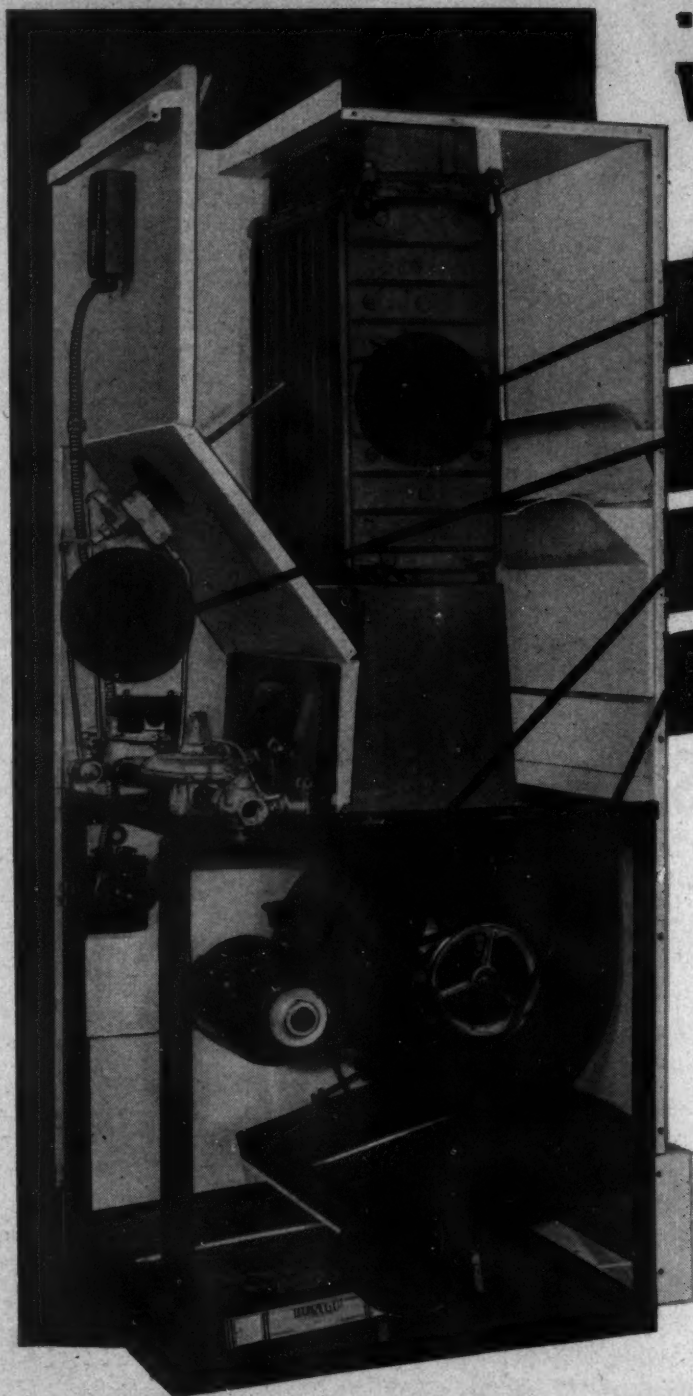


Never This! The Anystream
is self-cleaning.



Engineered for Longer Life

... new Richmond Winter Air Conditioner



YOU CAN SPECIFY the new Richmond Winter Air Conditioner with confidence. Its heart—the heat exchanger—gives greater protection against overheating... assures longer service life.

A single unit in a smart Dulux white enamel finish, completely packaged, it fits in home, office or store. Heats, humidifies, circulates, filters... comes in four sizes... occupies only about 4 to 6 sq. ft. Covered by both AGA approval and a one-year replacement guarantee. Write Richmond Radiator Company, 19 E. 47th St., New York 17, N. Y.

FACTORIES AT METUCHEN, N. J., MONACA, PA., NEW CASTLE, DEL., UNIONTOWN, PA. (2)



RICHMOND RADIATOR COMPANY

Affiliate Reynolds Metals Co.

HANDY! ROOF INCLINE FINDER



FREE! Here's practical help for you

What roofing do you prefer?

• As you know, the answer depends on the incline of the roof deck. What's ideal for one job may be a makeshift for another. That's why Ruberoid roofers have such an advantage! For no matter what type of roofing is indicated—whether smooth-surface Asbestos Felt and Asphalt, or Coal Tar Pitch and Tarred Felt with gravel or slag surfacing, or Asphalt Felt and Asphalt with gravel and slag surfacing—Ruberoid makes them all—and in specifications to meet any need!

RUBEROID

BUILT-UP ROOFING

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Asphalt and Asbestos Building Materials, Thermal Insulation

• When placed with its bottom edge on the roof, the pendulum of this useful device instantly swings to indicate the slope in inches per foot. It's a handy tool in making estimates—helps determine correct type of roof to use. Made of transparent plastic and ruled so that it can also be used as a protractor to take off the roof slope from drawings. Free on request—just fill in the coupon below, and mail today.

— MAIL THIS COUPON TODAY! —

The RUBEROID Co., 500 Fifth Ave., New York 18, N. Y.
Please send me the free Roof Incline Finder.

Name _____

Street _____

City _____ State _____

WHAT ABOUT THOSE BUILDING COSTS?

YOU constantly hear that building is a costly business these days. It is. Building costs, and all other costs, have risen in this period of inflation. So many plans are put on the shelf or "held in abeyance" when estimates come in from contractors. We all wait hopefully for building costs to come down so more of our clients can afford to build.

There seems to be little that any one factor in the industry can do about lowering costs. But at least there is one constructive move being made — the study of possible economies in house design and construction techniques sponsored by the Producers' Council and the National Retail Lumber Dealers Association. (See page 74.)

This study, with its educational program, is a step in the right direction. Its effectiveness will depend on the extent of its adoption by architects and builders, and also on the intensification and continuation of its research projects. The industry itself has got the jump on those who advocate government research to improve techniques and lower costs. Congressional investigations with their hearings this fall may show the need for more all-embracing measures than modular design and dimensional coordination. At best, the latter, good as they are, can effect only small percentages of savings. They will be most effective only when contractors must figure closely, sharpening their pencils for real materials lists and man-hour estimates, in order to get the jobs on lump-sum or upset price bids.

We must face the fact that building, along with the rest of our economy, is still in an upward spiral of postwar inflation. War waste has always been "paid off" by inflation. And we are still in the cycle of higher wages and higher prices. Nor are we likely to come out of it this fall, what with the cashing of G. I. bonds, the resumption of uncontrolled installment buying, and the unbalance of exports over imports. With next year an election year, political expediency will dictate continued "prosperity" and the reduction of income taxes with its inflationary effect.

However, we must realize that all things are relative and that building costs are not necessarily out of line with other costs. Figures may be had that prove that fewer man hours of the farmer's time, or the mechanic's, or the miner's, are needed to pay for building his home, and a better home, than ten or fifteen years ago. All the factors in the building field will do well to emphasize the fact that the building dollar will buy as much relatively, as the food, clothing, transportation or any other dollar. And the truth of the matter should be brought out in the Congressional hearings to restore public confidence and encourage more building at the new level.

Kenneth K. Stowell
EDITOR





the Tompkins house

HEWLETT HARBOR, LONG ISLAND

Marcel Breuer

ARCHITECT

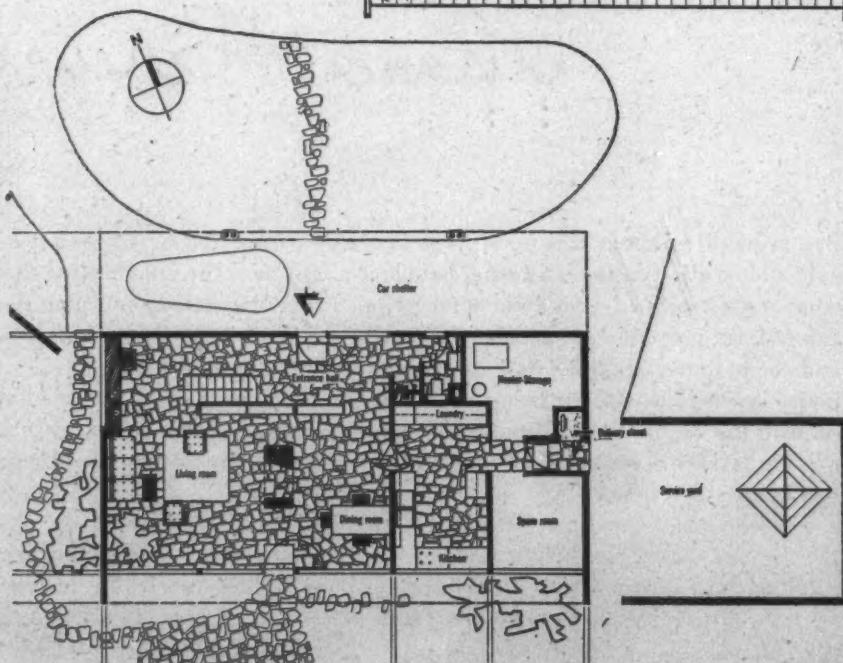
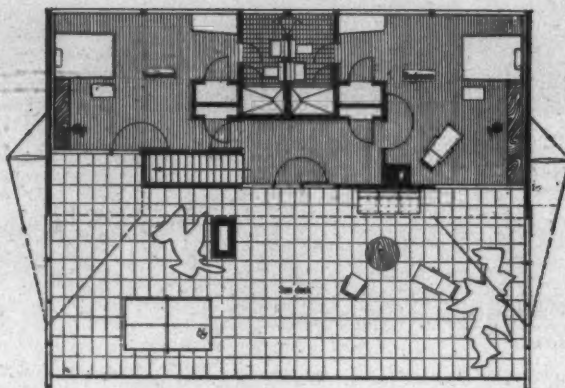
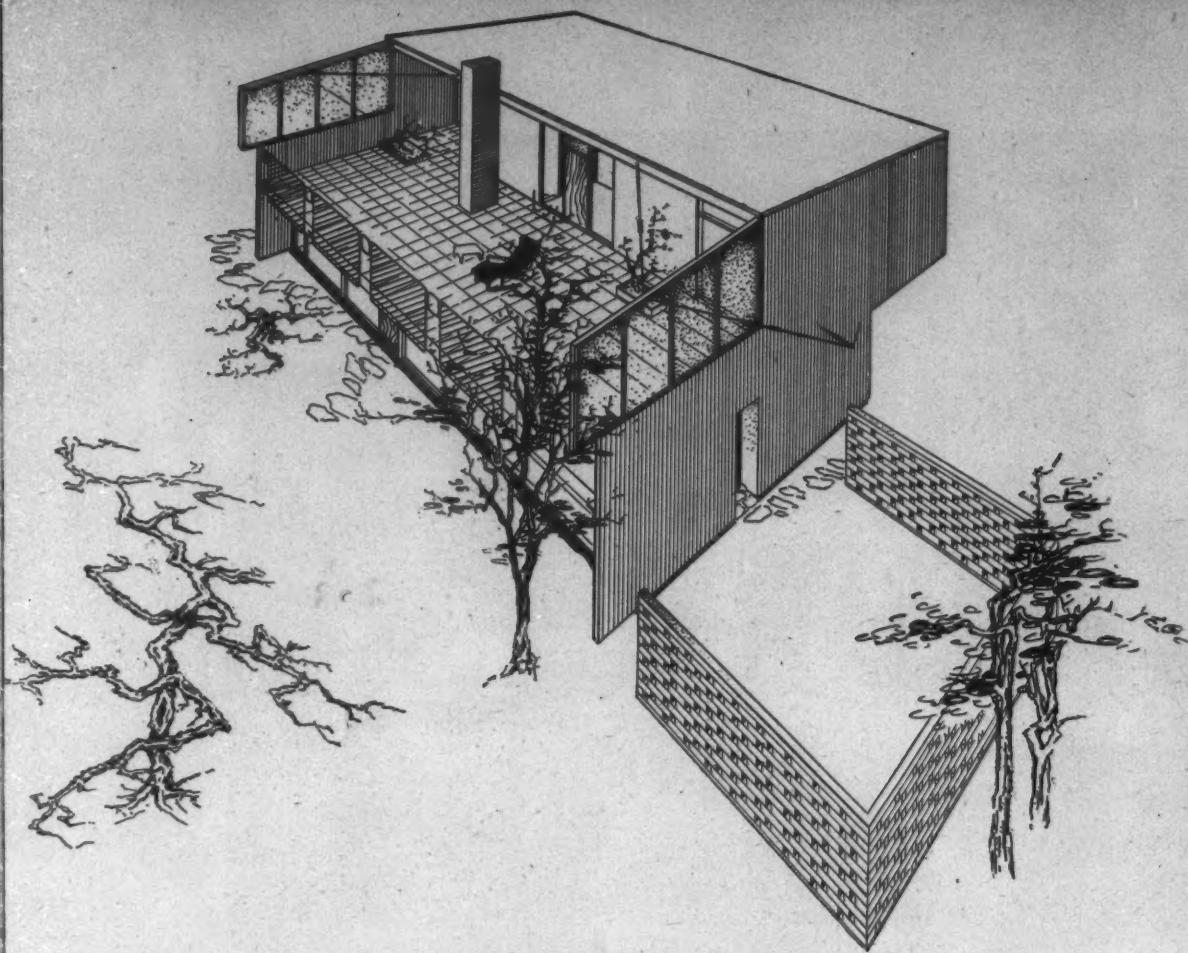
BECAUSE everything about this house is so logical, so straightforward, so ingeniously simple and so all-of-a-piece, a casual beholder might miss the imaginative thoughtfulness that went into its design and construction. From orientation and plan down to the last detail, its purposes are achieved directly, simply, efficiently — with a skillful choice and use of materials and a deft sureness in scale and proportion.

The house is spacious without being large because of the openness of its plan and its extension into the out-of-doors. By cleverly cantilevering the second story, a gracious outdoor living terrace is obtained on the upper level and at the same time a necessary car shelter is provided below.

Color is used daringly and successfully to make the house blend with the sky and the landscape — cobalt blue, bright yellow, white, coffee brown, and shades of gray.

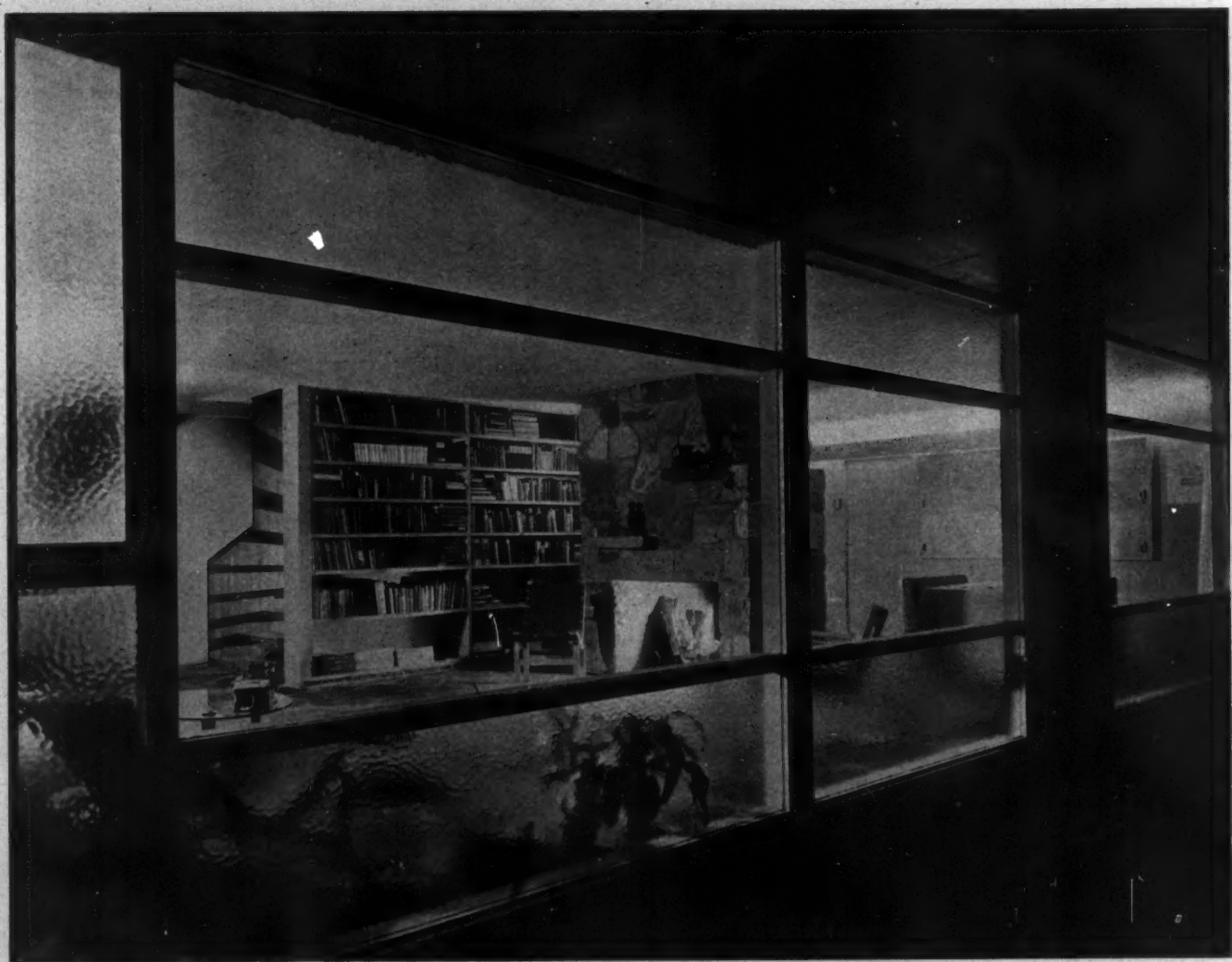
A careful analytical scrutiny of the design in detail will be rewarding in revealing both the forthright logic and the sensitive handling of "the simplest means to the desired ends."

273 Stroller Photos



In supporting the cantilevered second story, the walls are developed as trusses by utilizing the $\frac{3}{8}$ -in. plywood sheathing as an integral "stressed skin" element of the structure.

Perspective and planning show auxiliary glazed shields (with their tension braces) for additional protection and privacy



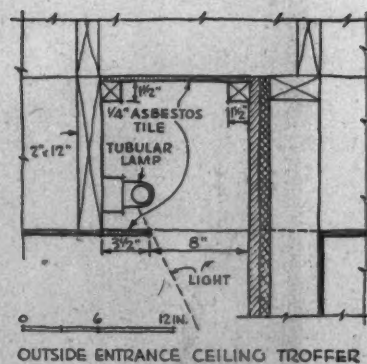
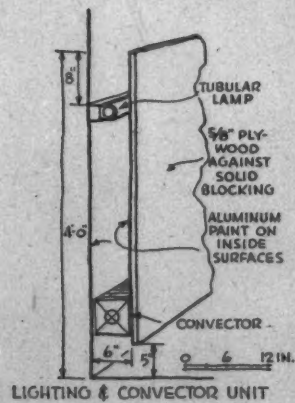
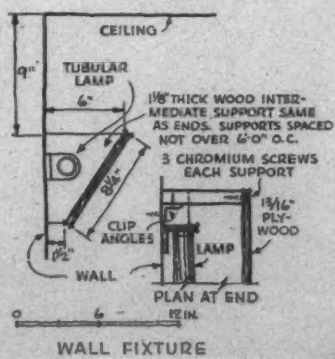


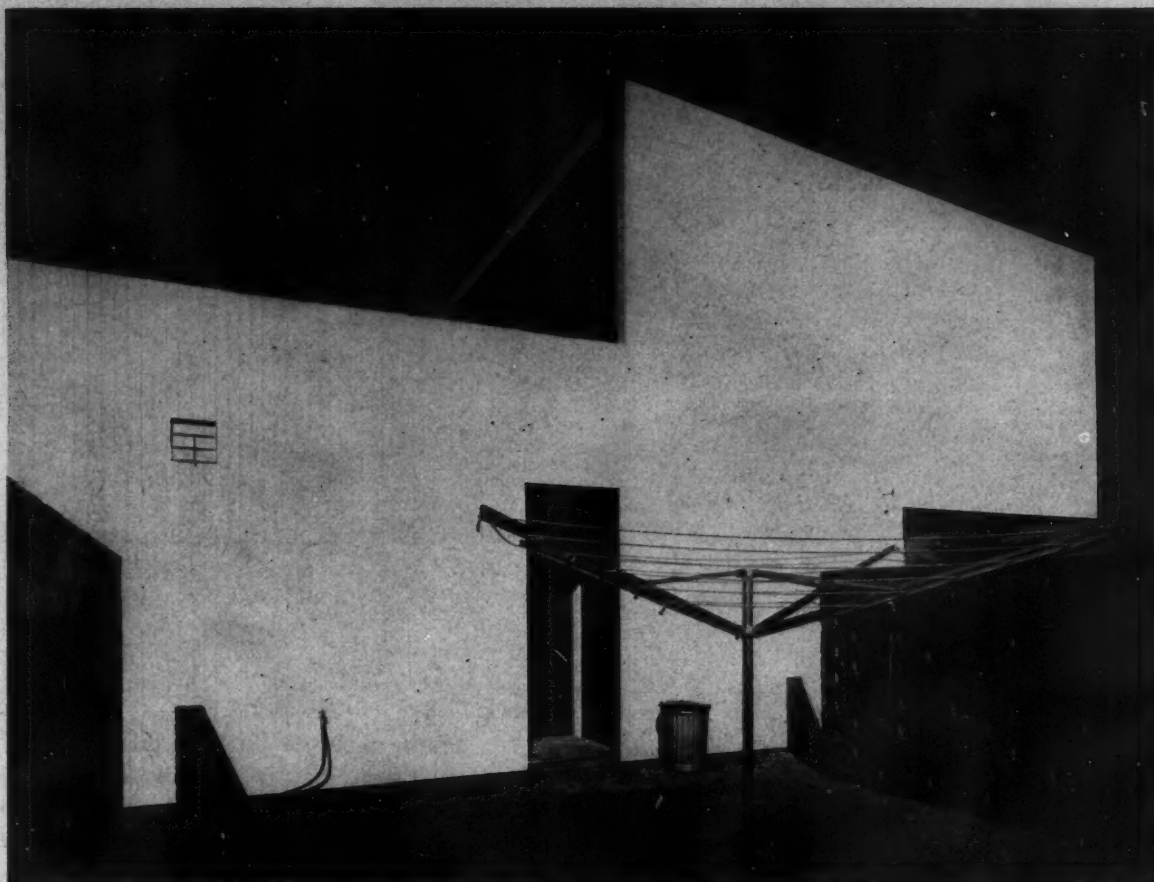
The two-way fireplace separates the living and the dining areas so that the cheer of a single fire can be enjoyed from either or both sides. The book-case wall divides the living-dining area from the entrance hall and stair. The open planning provides for a maximum expanse of view to the south.

Looking through the double-duty fire-
place from the dining to the living area.
Winter heating is provided by a split
system which supplies hotter water to
the coils of the convector system of the
second floor than is needed for the

concrete-embedded coils of the radiant
system of the ground floor. Tempera-
ture controls are automatic and thermo-
static. Advantage is also taken in living
and dining area of solar radiation
through the large windows to the south





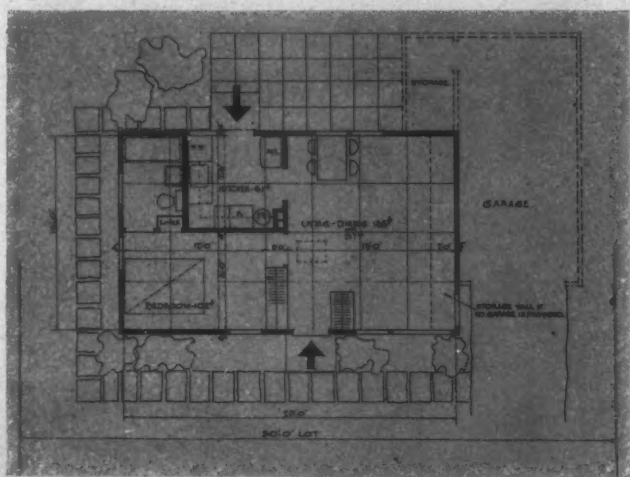


The open tread stair is supported on one side by the back of the bookcase and on the other side by the paneling suspended from above. . . The detailed drawings show simple but most effective details of the indirect lighting. The lighting-and-convector unit is shown also in the illustration (right) . . . The service entrance has an outside delivery closet from which meters can be read without entering the house





THE INDUSTRY E



The basic one-bedroom house, 16 by 28 ft. interior dimensions, was designed to meet FHA minimum requirements. Dotted lines show possible added garage and storage

THE impressive title of this project, "The Industry Engineered House," might have several widely different connotations, so a word of explanation to the architects and designers is in order to prevent any possible misunderstanding.

In the first place, this is not a plan for a single house, or even a group of houses. It is rather a research study and a practical program to determine how houses can be both designed and built to perform their functions with the least waste of time, material and effort.

It is a project to determine and demonstrate the best possible ways of designing houses on a modular basis so that the assembly of standard available building products will be most efficiently and economically coordinated. In this sense perhaps, it is "engineered," for engineering might be defined as "the scientific determination of the best means to the desired end." Actually, the study was developed under the direction and supervision of architects and reflects the normal logical approach.

It is "industry engineered" for it is industry-wide in its development and in its application. It is not limited to any one particular type of material or equipment, but rather considers *all* that are currently available as standard items. It is "industry engineered" also in the sense that it is sponsored by the two organizations in the building industry, the Producers' Council and the National Retail Lumber Dealers Association, and has had the benefit of the thought and experience of experts from all phases of the industry — architects, engineers, builders, manufacturers, dealers, contractors, artisans and consumers.

Architects active in the field of home design should profit by the results of the research undertaken because the principles and the procedure are as applicable to their design and supervision as they are to any other factors in the home-building field.

RY ENGINEERED HOUSE

By Gordon Lorimer

Not a Plan Service

The basic idea has been and is to develop plan design and construction techniques that will bring about closer integration and better organization in the home building field. While it was necessary to develop and utilize specific house plans in order to demonstrate the possibility of improved techniques, these plans are purely incidental to the basic final objective as stated. The designs and plans, therefore, shown here are merely the first examples of what can be done to further the economy and efficiency of small house design and construction rather than any attempt by the sponsors to inaugurate a plan service. They are demonstrations of the application of principles, not stock plans.

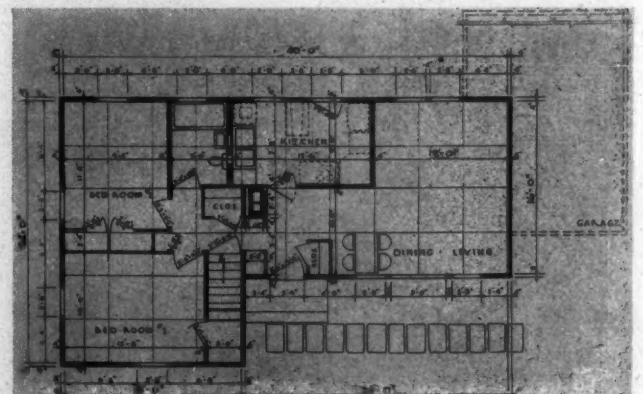
Standard Available Materials and Equipment

This project is not an attempt to "revolutionize" the home building industry, but rather to coordinate the materials which are now available in stock sizes and types by the simplest, most direct methods of assembly.

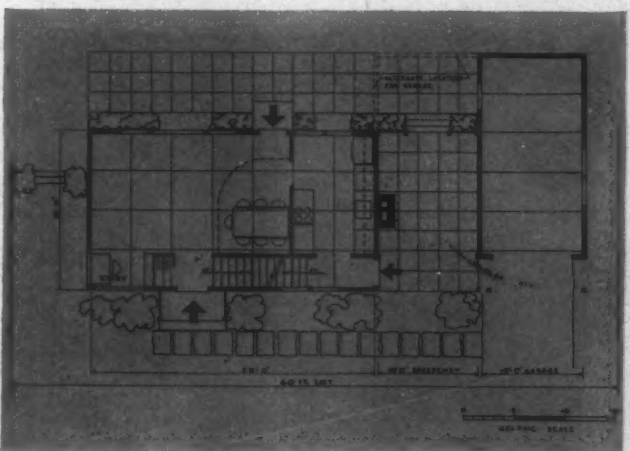
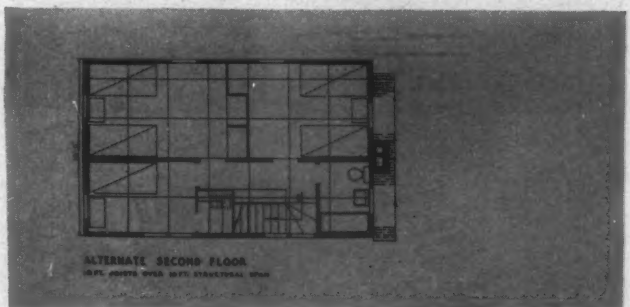
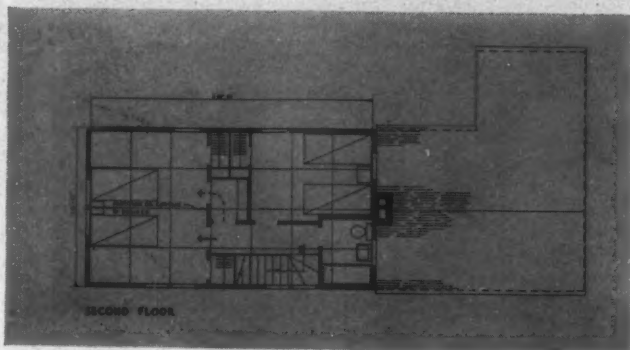
A survey just conducted shows that the manufacturers of practically all materials and equipment have stock and standard items that can be incorporated in "industry engineered" houses.

The project takes advantage of most of the known and practiced techniques for time and labor saving, and for organizing and coordinating the work so that these stock materials will be assembled together with a minimum of cutting and fitting. This means maximum economy and lowest possible cost to consumer.

Naturally these studies in the assembly of various stock materials will show the possibility for further standardization of many items and may indicate that modification in certain sizes and details can be made in the interest of ease and simplicity of assembly. This, in turn, will permit manufacturers to concentrate on items which fit best into the pattern, and this concen-



The single story L-plan, two 16- by 24-ft. units, is flexible and adaptable; many variations are possible without basic changes. It can be placed on a 40-ft. or 60-ft. lot if the garage is in the basement. Perspectives show possibilities of basement or ground level garage locations



A two-story house, 16 by 28 ft., with either two or three bedrooms (see alternate plans). Note that 18-ft. joists are used over 16-ft. structural span in three-bedroom scheme. Minimum roof and foundations make this two-story home the most economical for a given floor area

tration will mean greater mass production of those particular items. Mass production means lower manufacturing costs, and also savings in inventories both at the point of manufacture and in the dealers' yards. This should also mean a more prompt and steady flow of materials. Further, it may well indicate economies through packaging of materials and in some cases an increased amount of pre-assembly of materials prior to delivery at the site.

Proof of the Pudding

The months of effort in the study of materials and their coordination in plan must stand the test of practical application. Therefore, arrangements have been made to construct several test houses, and these houses are now under construction at Urbana, Illinois, under the supervision of the University of Illinois Small Homes Council. Three frame and three masonry houses will be erected consecutively. During the construction of each, careful study and analysis will be made of erection techniques, with any improved methods derived from the observations to be applied to the next house. After careful analysis of results, man-hour schedules for each operation will be made available to the building industry, not necessarily as a final answer, but as something in the nature of a target at which to shoot in future efforts by individual builders.

It is hoped that there will be sufficient industry-wide interest that local builders may accept such information as somewhat of a challenge, and attempt better standards in their own work. Where such further improvements are reported, it is the intent of the Technical Committee of the Producers' Council to follow up with further investigation and analysis, and in turn make that available to the industry at large. It is this industry-wide form of collaboration from prime manufacturers right through to the ultimate site labor that forms the real basis for the name "Industry Engineered House." To date, the building industry has been a somewhat loose and quite complex aggregation of individual efforts and interest. This voluntary pooling of information and "know how" is a very significant indication of a growing industry-wide unity.

Design and Construction Principles

The principle of modular design and dimensional coordination was adopted at the outset, the A.S.A. 4-in. unit and the 4-ft. planning grid both horizontally and

vertically (inside dimensions) to eliminate cutting and fitting of sheet materials.

In American domestic architecture, the 4-in. unit has been a significant dimension for many years due to the early selection of 16-in. and 24-in. stud and joist centers for frame construction. This has led to the development of sheet board materials in 4-in. multiples, such as 48 by 72-in., 96-in., 120-in., and 144-in. Many plaster bases come in 16- by 48-in. sizes, while insulating blankets and batts have been developed to fit framing at 16-in. and 24-in. centers. Today, practically all available stock windows in wood and metal are coordinated to 4-in. increments, or multiples thereof.

Selection of 4-ft. Unit

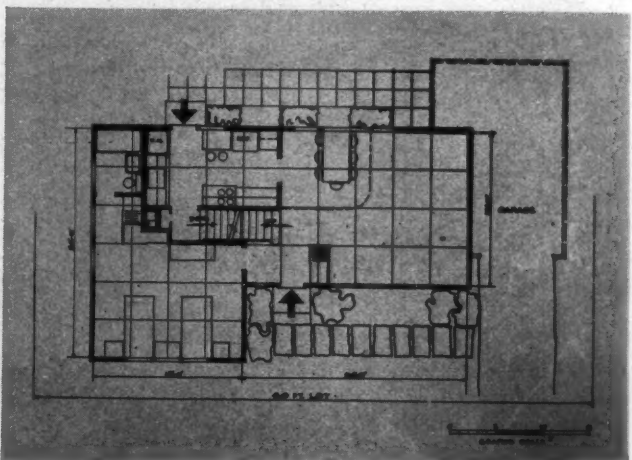
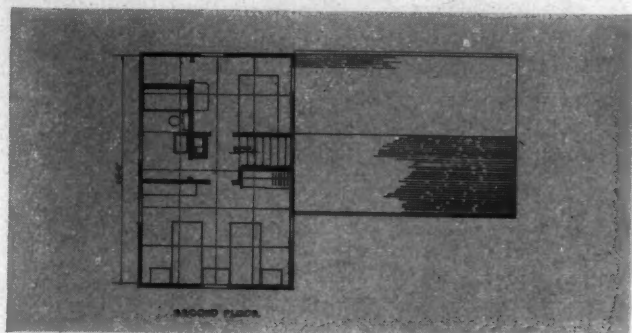
As the sheet materials referred to above have common dimensions of 4 ft., it was found advantageous to design with a 4-ft. plan grid, and to enclose such spaces with whatever wall combination was desired for each individual case. Detailed development of the plans has shown that this basic planning assumption produces the minimum of cutting of interior finishes. Similarly, panelization of the exterior is efficiently possible, provided a corner post or cover plate detail is devised to compensate for wall thicknesses.

Standard Structural Span 16 ft.

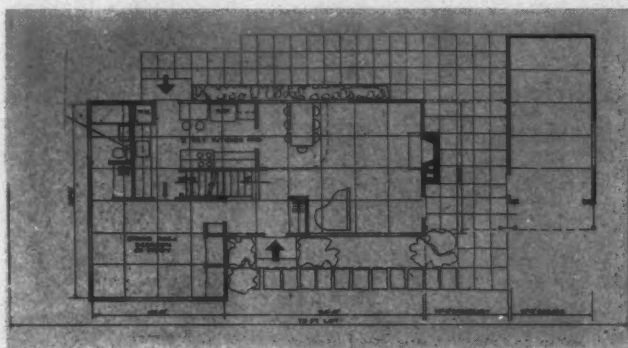
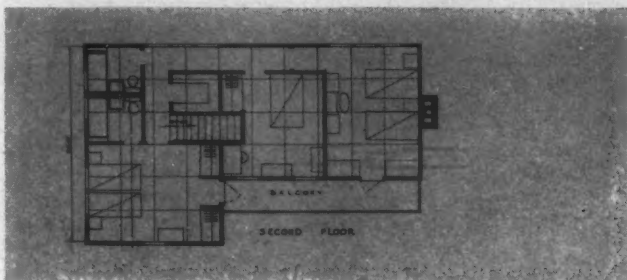
Analysis showed 2- by 10-in. floor joists to be readily available and capable of meeting most code and FHA requirements at 16-ft. span, without intermediate girders or footings. Coincident with this is the fact that 16-ft. clear span is the minimum dimension at which a proper single-run stair can be run in the direction of the span, with an adequate landing at each end. The 16-ft. span also permits the use of a very simple tied rafter type of roof truss, readily assembled on the floor, and easily lifted into place by two men. Therefore, this 16-ft. span has been made the controlling element of the various houses developed. It was found that considerable variety in sizes and type was possible while maintaining this span. The same type of analysis, however, can undoubtedly be made by the individual architect in analyzing buildings of different span requirements.

Plan Unit Dimensions

Applying the controlling span dimension of 16 ft. in width by a multiple of 4 ft. in length, major plan ele-

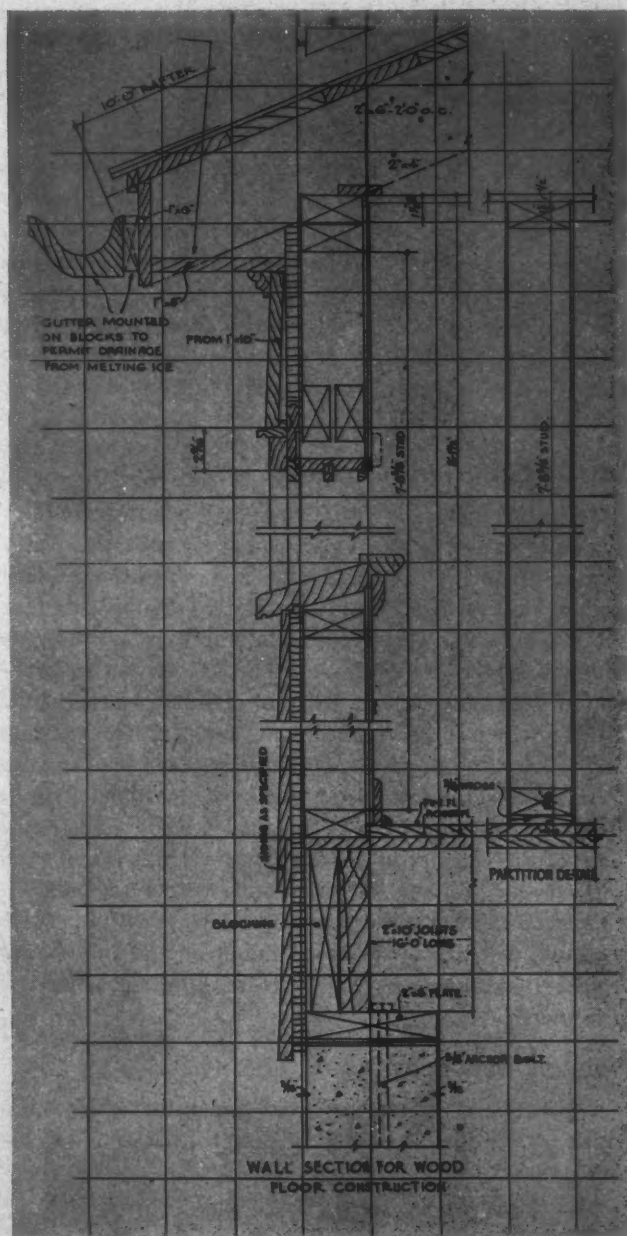


Upstairs bedrooms may be added to the L plan by adding a second story to one of the units of the first floor plan. The added bath comes in position to make plumbing connections economical



Here both 16 by 24 units of the L plan have been given a second story, to provide three upstairs bedrooms. A third bath is added, but still positioned for economical connections throughout

A wall section of a single floor wood frame house. Note the 10-ft. rafters have standardized plate and end cuts. Note interior partitions of 7 ft. 8 $\frac{5}{8}$ -in. studs with nominal "2 by 4's" top and bottom permitting partitions to be fabricated horizontally and turned to vertical placing, finally to be wedged tight at base with $\frac{3}{8}$ -in. wedges



ments of 16 by 24 ft. and 16 by 28 ft. were derived, and used in various combinations horizontally and vertically. For example, the first house selected for test development was a one-story house of two 16- by 24-ft. plan units placed together to form an "L" shape.

Vertical Dimensions

For houses having concrete floor slabs, 8-ft. studs are standard, resting on the 2- by 4-in. plate anchored to the concrete foundation wall. For wood floor construction, studs are standardized at 7 ft. 8 $\frac{5}{8}$ in. for both exterior and interior. The reasons for this are apparent from the assembly shown in section on page 78, as sheet or board interior finishes can be used without cutting.

Roof Framing

The standard 16-ft. units are spanned by simple roof trusses 2-ft. on centers, constructed of 2- by 6-in. rafters with 2- by 4-in. ceiling ties supported at the center by a drop hanger to eliminate deflection. The 2-ft. spacing permits the chimney to be placed between trusses without special framing. Flat roofs are as simply framed as the floor.

Windows

While standard double hung wood windows, with spring or patent balances are shown, coordination is possible with fixed, casement or other windows of wood or metal, and any type of fenestration can be accomplished within the modular framework.

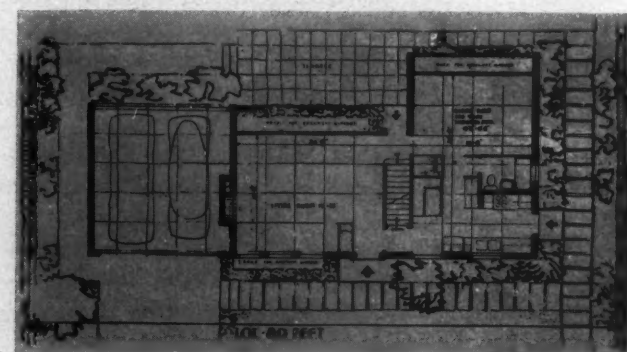
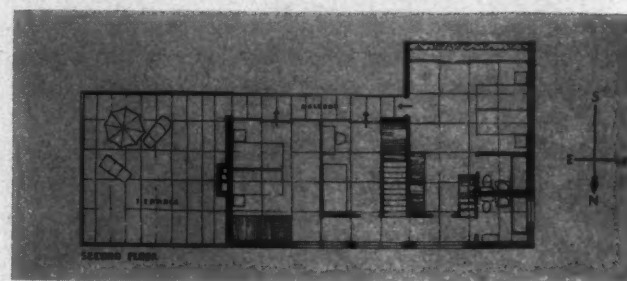
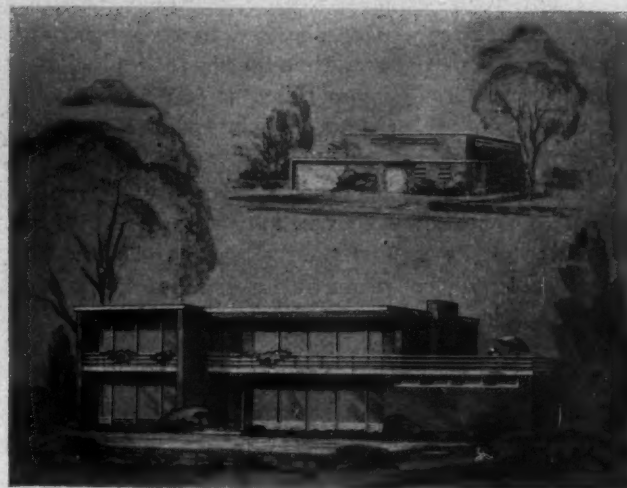
Mechanical Equipment

There is recognized economy in a single plumbing system having kitchen and bath back to back and second-floor baths directly over bath and kitchen below. Standardized plumbing sections will permit pre-assembly or prefabrication or the development and use of utility cores, depending on local building codes and labor practices. Codes and practices which are unsound from the point of view of efficiency and economy are subject to change.

Any desired heating system and equipment may be coordinated with the plans, from small space heaters to radiant coils or ducts. No attempt has been made in these early studies to analyze, select or advocate any particular heating or air conditioning systems.

The conventional wiring and electrical installations have been assured.

It is hoped that the careful analysis and time studies now undertaken at the test houses at Urbana will show the possibilities of further economies both in design and in structural and mechanical assembly methods.



The advocated design and construction principles are adaptable to houses planned for maximum glass areas on their southern sides. The illustrations show a modern "solar" house of modular masonry construction, with the plan developed on the 4-ft. module (interior dimensions). The use of 18-ft. joists over the living room provides both sunshade and balcony leading from all bedrooms to the terrace over the garage.

HOUSING AND THE 80th CONGRESS

By Norbert Brown

THE 80th Congress was disposed to consider many problems more pressing than housing — and when it reluctantly had to “do something” it preferred investigation to wholesale legislation and lavish appropriation. Decontrol was the order of the day.

So doctrinaire housing took a walloping in the first session of the 80th Congress. It wasn't knocked out but it was reeling against the ropes when the final bell rang. The battle between realism and housing theory will be continued during the recess and in the rounds of the next session.

Background factors were the obvious failure of the Veterans' Emergency Housing Program, the necessity of modifying controls following the demise of OPA, and the devastatingly critical report of the Housing Committee of the American Legion, largest and strongest veterans' organization.

In the Congress itself sharply contrasting attitudes predominated as between House and Senate. It is perhaps significant that the House was 100 per cent newly elected, while the Senate was only a third newly elected, had a slim Republican majority and a strong leader who had previously accepted housing ideas that originated with the New Deal housing bureaucracy.

Economy minded, the Congress trimmed the appropriations of the housing agencies substantially. Despite the position of leadership of Senator Taft and of his sponsorship, the National Housing Commission bill got very little attention, and beyond the gesture of a favorable 7 to 6 vote by the Senate Committee on Banking and Currency, it might just as well not have been introduced in this Congress.

Aside from the approval of Reorganization Plan No. 3 setting up the Housing and Home Finance Agency as successor to the National Housing Agency, the attitude of Congress toward housing was almost completely negative. The passage of Reorganization Plan No. 3 seemed contradictory to the other things the Congress had done in so far as housing was concerned.

Setting the Stage for Congress

Shortly after the November elections came the 8000-word blast of the Housing Committee of the American Legion against the Bowles-Wyatt veterans' housing program. “The program designed to solve this problem was not concentrated upon in an emergency light. A long-range program designed to treat a chronic condition, rather than an emergency, was planned,” said the report. Hence, the committee opposed the Taft-Ellender-Wagner long-range housing bill as “not germane to the veterans' emergency housing situation.”

The report asked for the removal or elimination of most controls, elimination of subsidies to manufacturers and prefabricators, and other implements termed by Housing Expediter Wilson W. Wyatt as the “heart” of the program. It was only a matter of days before Mr. Wyatt resigned, after the refusal of his recommended \$52,000,000 RFC loan to the Lustron Corporation.

The new Housing Expediter, Frank R. Creedon, coming from the decontrol-minded Civilian Production Administration, within a few days of his appointment, announced that his program had “been worked out within a framework of our policy of relaxing controls as rapidly as possible” and in conformity with the President's housing statement issued on December 14: Priority ratings were abolished; the system of set-asides of materials in the hands of dealers and producers was eliminated; the fixing of price ceilings on houses was dropped, but floor area of dwellings was restricted to 1500 square feet; the prohibition of home building by nonveterans was repealed. Controls were maintained on “deferrable and nonessential” nonresidential construction.

“The emphasis in the new housing program for 1947,” said Mr. Creedon, “is on affirmative measures and incentives, rather than on controls.” These incentives included premium payments to producers of building materials, guaranteed market contracts for prefabricators, broadened use of insured mortgage financing to encourage building of rental housing for veterans.

The Housing and Rent Act of 1947

Preceded by further relaxation of OHE controls, effective June 1, which eliminated federal permits on housing up to 2000 square feet in area, the Congress late in June passed the Housing and Rent Act of 1947, which, among other things, lifted practically all remaining controls over construction. The Act became law on June 30 when the President reluctantly signed it.

The law has two titles, one relating to construction, and the second to rent control. Title I removed federal emergency controls over all construction, excepting of buildings designed for amusement, entertainment or recreational purposes, which continue to require permits from the Office of the Housing Expediter. It also extended FHA Title VI mortgage insurance to March 31, 1948, authorized FHA insurance of private short-term production loans to manufacturers of prefabricated housing, and gave 30-days' preference to veterans on new houses offered for sale or rent.

The aims of Title II of the Act were the subject of

(Continued on page 136)



Mies van der Rohe

MIES VAN DER ROHE

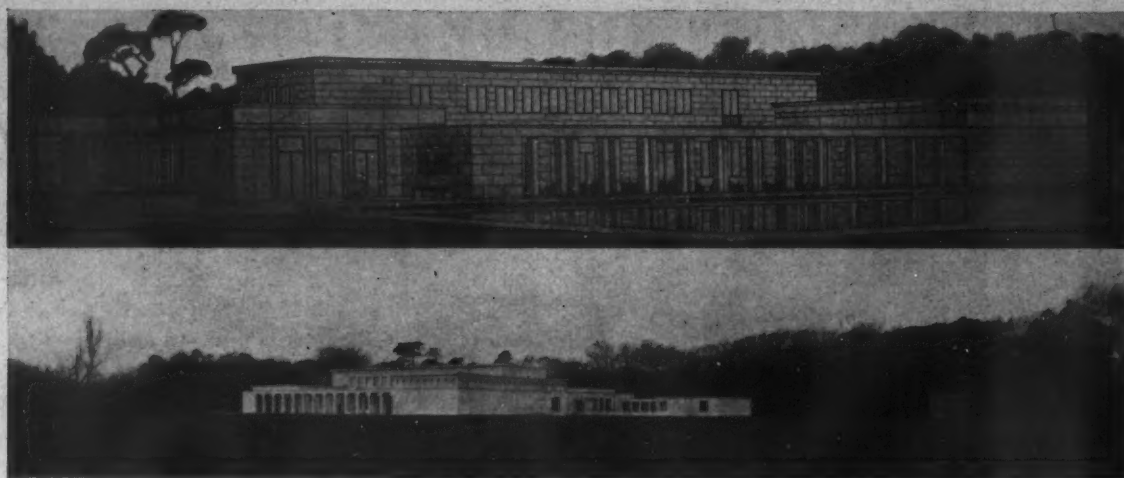
1886	Born March 27 in Aachen (Aix-la-Chapelle), Germany
1897-1900	Attended the Cathedral School in Aachen
1905	Moved to Berlin
1905-1907	Apprentice in the office of Bruno Paul
1907	Built first house as independent architect
1908-1911	Employed in the office of Peter Behrens
1912	Worked on Kröller house, The Hague, Holland
1912-1914	Independent architect in Berlin
1914-1918	Served in the army
1919-1937	Practiced architecture in Berlin
1921-1925	Director of architectural exhibits for the November-gruppe
1925	Founded the Zehner Ring
1926-1932	First Vice-President of Deutscher Werkbund
1927	Director of Werkbund Exposition, Weißenhofsiedlung, Stuttgart
1929	Director of German Section of the International Exposition, Barcelona, Spain
1930-1933	Director of the Bauhaus, Dessau and Berlin
1931	Director of Werkbund Section "The Dwelling," Berlin Building Exposition
1937	First trip to the United States
1938	Emigrated to the United States Director of Architecture at Armour Institute, Chicago (since 1940, Illinois Institute of Technology)
1944	Became an American citizen

THE art of architecture has achieved no higher expression in our time than in the work of Mies van der Rohe. And yet, unlike Le Corbusier, Gropius, Oud, and Wright, he has received relatively little personal or professional publicity. His work, which is on exhibition from September 17 to November 23 at the Museum of Modern Art in New York, has shocked the traditionalists, inspired the imaginative, and made undisputed architectural history. His name is just becoming familiar to the general public. The illustrations for this article are from the monograph on the architect by Philip C. Johnson, published this month by the Museum.

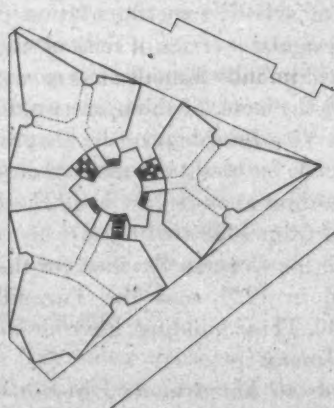
Mies was born in Aachen in 1886. His father, a stone-mason, gave him an early understanding of the materials and craftsmanship of building. As a young man he was influenced by three outstanding architectural pioneers, Peter Behrens, H. P. Berlage, and Frank Lloyd Wright. From Behrens he learned the importance of order and simplicity, from Berlage, the discipline of structural honesty, from Wright the possibilities of a new architecture. During the exciting years of artistic experimentation just after the first World War Mies designed a series of radical, imaginative projects that made him internationally famous among progressive architects and greatly affected the work of the next two decades. In 1926 he was appointed First Vice-President of the *Deutscher Werkbund*, the most powerful influence for quality in modern design, and organized the *Werkbund* Exposition at Stuttgart in 1927. He was Director of the Bauhaus School from 1930 to 1933. Of his executed buildings the most famous are the German Pavilion for the Barcelona International Exposition in 1929, and the Tugendhat house, Brno, Czechoslovakia, 1930. These buildings have already become classics of the modern movement.

In 1937 Mies came to America. As Director of Architecture at Illinois Institute of Technology he is now engaged in the most important large-scale project of his career: the planning of the school's entire new campus.

The buildings of Mies van der Rohe possess a unique purity. The basis of his design is the direct expression of structure. Through studied simplicity of forms and textures and the elimination of the superficial he achieves the ultimate refinement of proportion and shape.

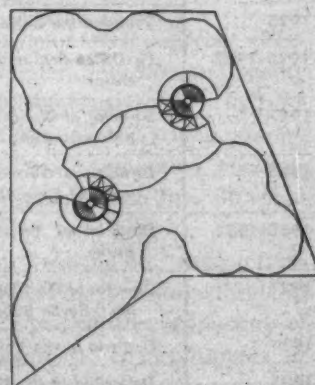
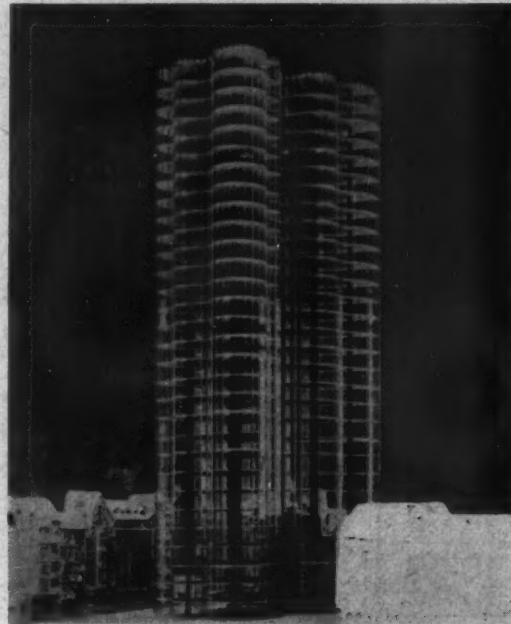


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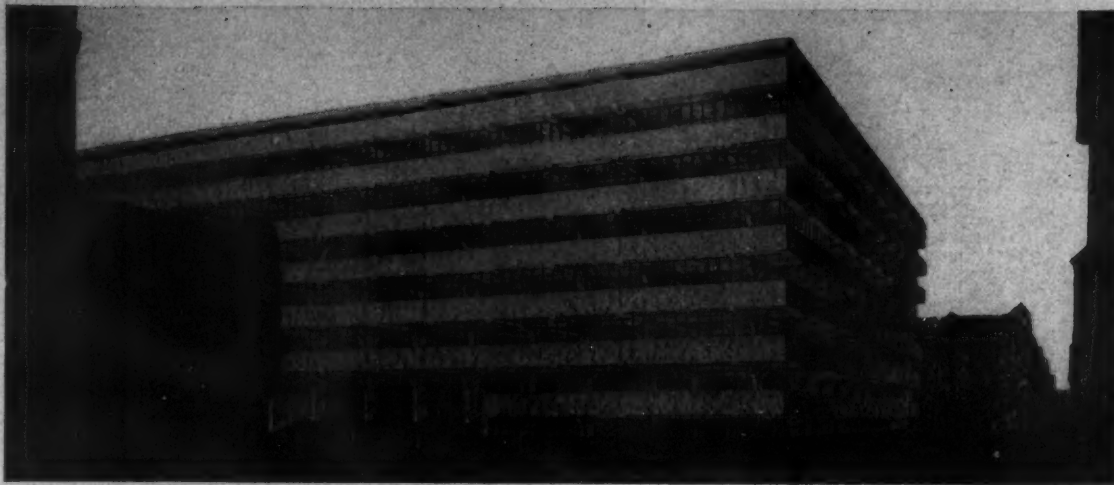
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(1) and (2) The Kröller house, the Hague, Holland, 1912, shows the formal asymmetric massing of Mies' early Neo-Classic style. During the period of artistic experimentation just after the first World War Mies discarded all traditional forms in a series of projects of such startling originality that they became landmarks in the history of modern architecture. (3) The 1919 design for an office building on the Friedrichstrasse in Berlin, and (4) the

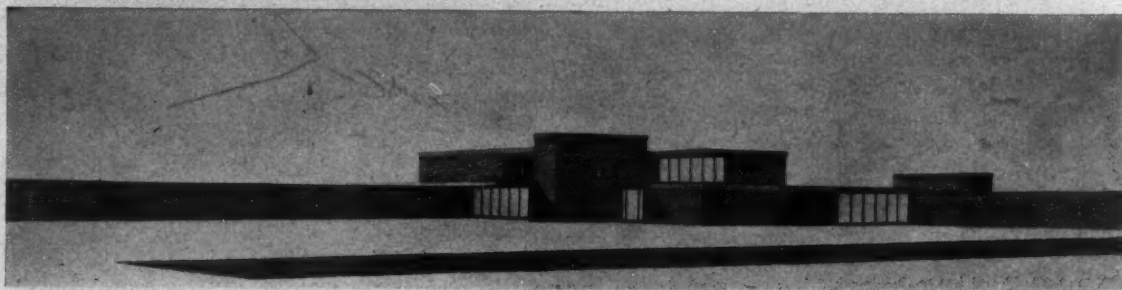


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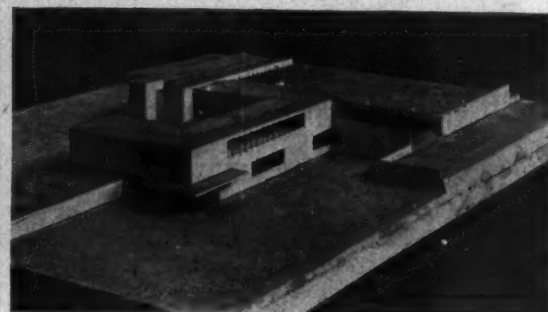
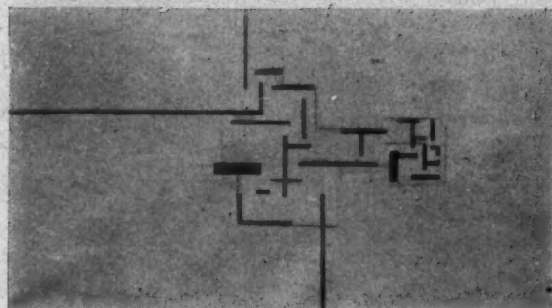
1920-21 scheme for a skyscraper are glass sheathed steel skeletons of daring simplicity. (5) The 1922 project for a glass and concrete office building is the first, now-classic, example of the cantilevered ribbon-windowed building. (6) and (7) Project for a brick country house, 1923. (8) Project for a concrete country house, 1924. (9) Monument to Karl Liebknecht and Rosa Luxemburg, Berlin, 1926. Photos on pages 82-88 courtesy Museum of Modern Art.



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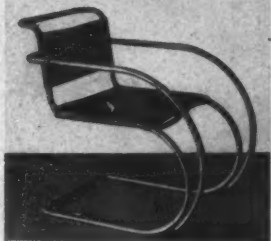
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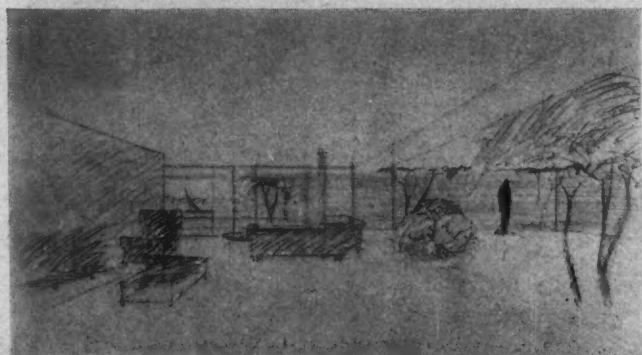
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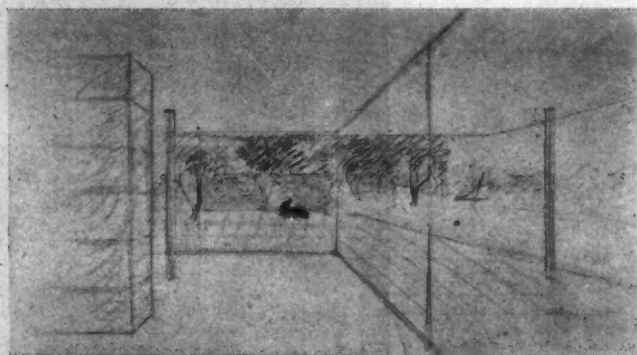




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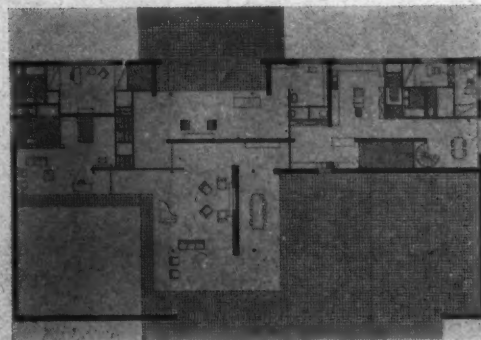


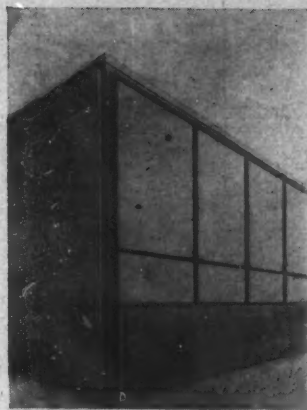
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Mies' most active building years were from 1927 to 1933. As Director of the Werkbund Exposition in Stuttgart in 1927 he designed (1) an apartment house and (2) a glass exhibit. (3) and (4) The German Pavilion at the International Exposition at Barcelona in 1929 is a concept of singular purity, with independent walls, flowing space, and rich textural contrasts. (5) (6) and (7) The Tugendhat house in Brno, Czechoslovakia, 1930, contains interiors of unusual perfection of detail. Mies is also famous for the furniture that he has designed for these buildings: (9) and (10) the much-copied steel tube MR chair of 1926, (8) the "Barcelona" chair for the 1929 Pavilion and (11) and (12) the two chairs for the Tugendhat house. From 1931 to 1938 Mies developed a series of "court-house" designs, where the brick walls of the house reach out to enclose garden courts. (13) and (14) In the Hubbe house, Magdeburg, Germany, 1935, glass walls form the only separation between these courts and the living space





As Director of Architecture at Illinois Institute of Technology in Chicago since 1938, Mies has designed the school's entire new campus. All the studies and executed buildings are remarkable for the careful proportioning of starkly simple forms, dependent for their esthetic effect upon the basic systems of construction used. (1) A corner of the Library and Administration Building, projected in 1944, shows the design effect of the careful joining of steel, glass, and brick. (2) and (3) The Minerals and Metals Research Building, completed in 1943, and (4) and (5) the Alumni Memorial Hall, 1945-46, both with Holabird and Root associated, effectively demonstrate how this design principle is carried out. A regular con-

struction system based on the same cubic bay, 24 by 24 by 12 ft. high, unifies the buildings. Because of necessary fireproofing the steel columns of the Alumni Memorial Hall are encased in concrete, and the concrete faced with mullions. (6) To show that these mullions are not supports they are stopped just short of the ground. Another subtle refinement (7) is the indentation around the mullions, minimizing any unevenness of the brick edge. (8) and (9) Two versions of the same building, a project for the Promontory Apartments in Chicago, 1946, show the different appearance that results from the choice of different structural materials: right, brick and concrete version, left, steel and glass version



Hedrich-Blessing Photos



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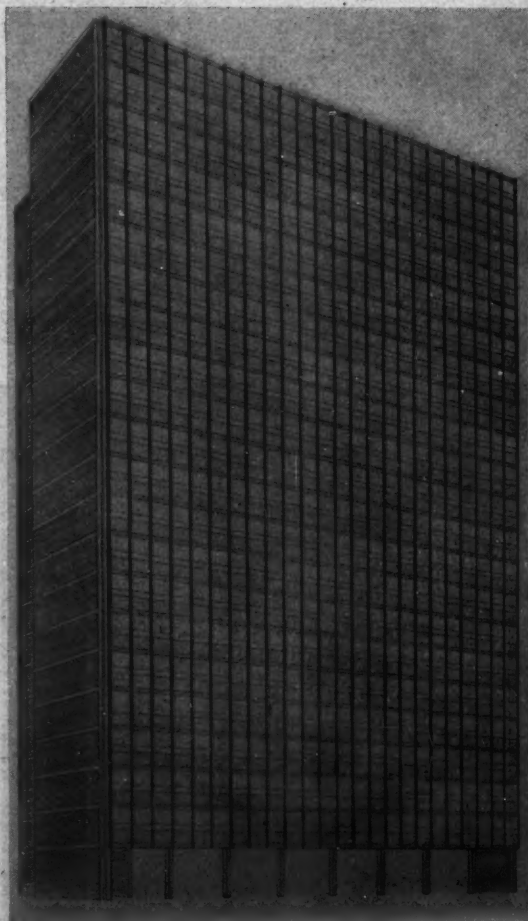
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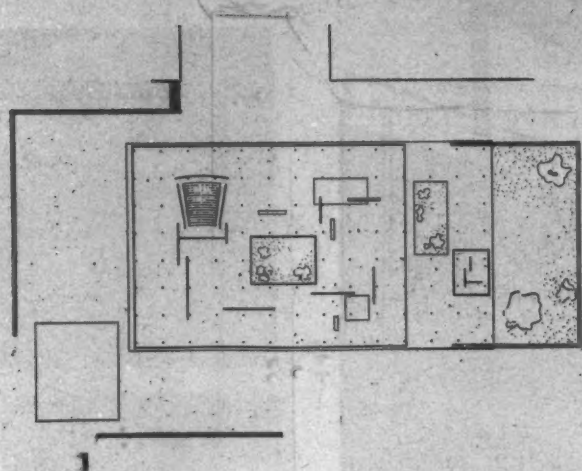
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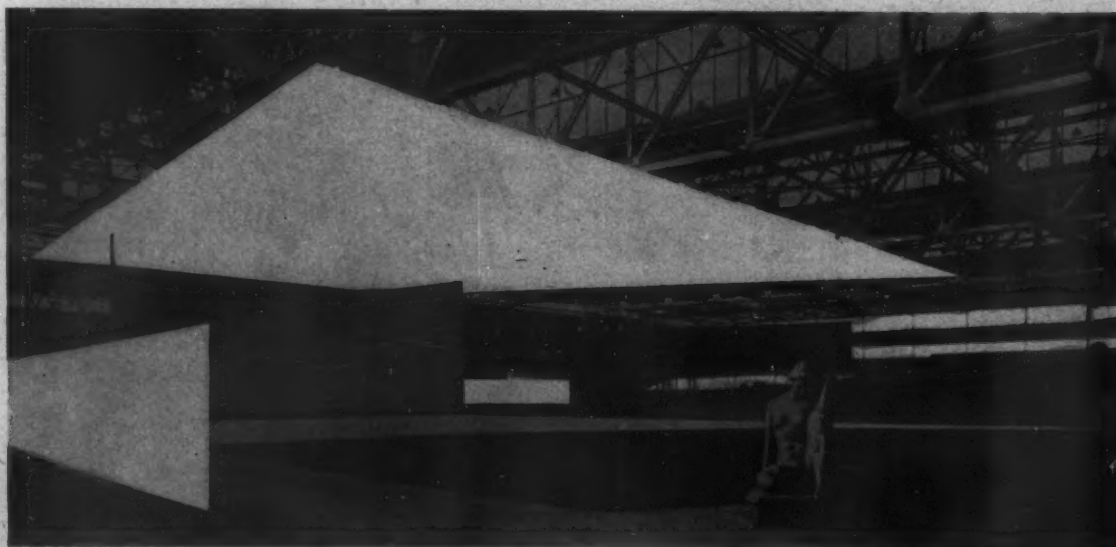
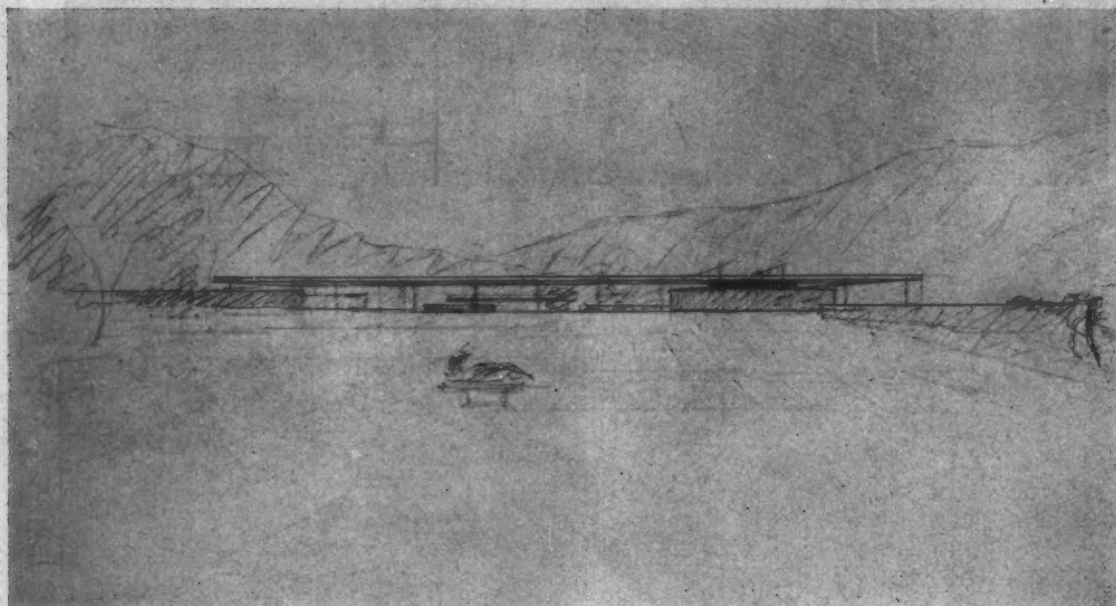
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(1) and (2) Mies' project for a small museum, conceived in 1942, represents the ultimate in flexible structure, reduced to its simplest terms. There are columns and a roof slab and floor plate with glass exterior walls. Free-standing partitions allow complete interior rearrangement. Painting and sculpture on display become part of the architectural scheme, although never subordinated to it. The extreme simplicity of the setting is an ideal background for works of art. The exterior sketch shows the elongated horizontals of the transparent glass rectangle through which can be seen the curved wall of the auditorium on the right, and in the center, the suspended balcony of the Print Department. From the auditorium of this building Mies has developed his radical scheme (3) for a concert hall, 1946, made of free-standing partitions and an acoustical dropped ceiling within a trussed steel and glass cage. In these latest designs, comparable to the important projects of the Twenties, Mies continues to pioneer in the development of experimental modern architecture





RELIGIOUS BUILDINGS

ARCHITECTURAL RECORD'S

BUILDING TYPES STUDY NUMBER 129

REALISTIC PLANNING FOR RELIGIOUS INSPIRATION

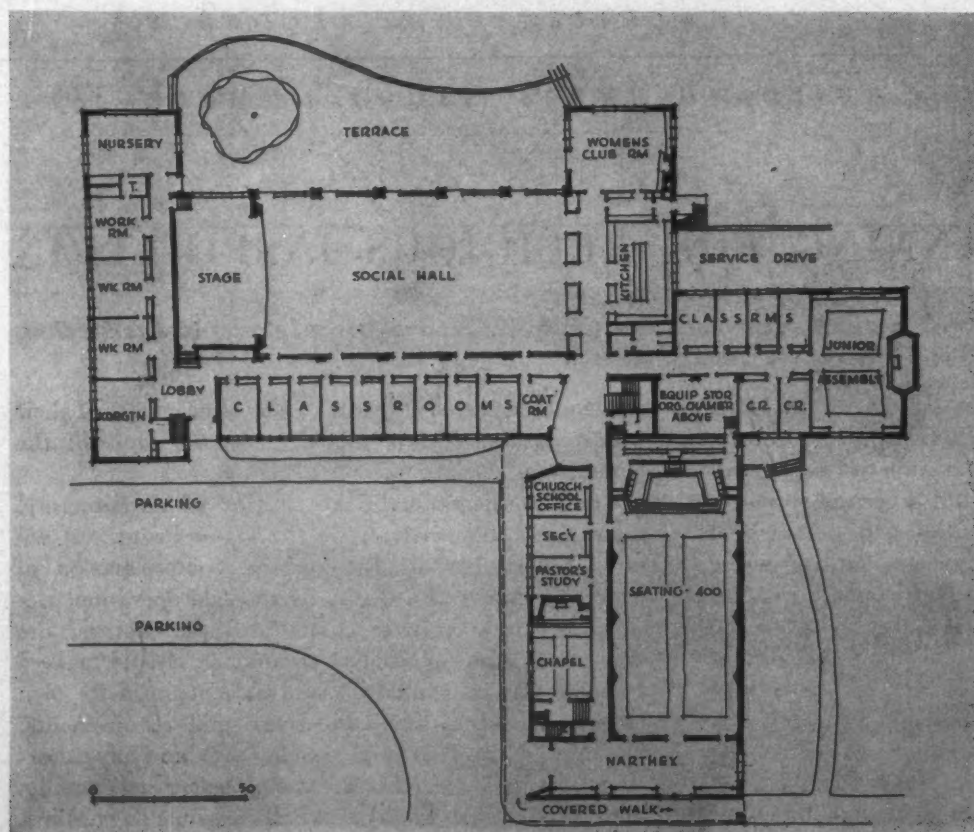
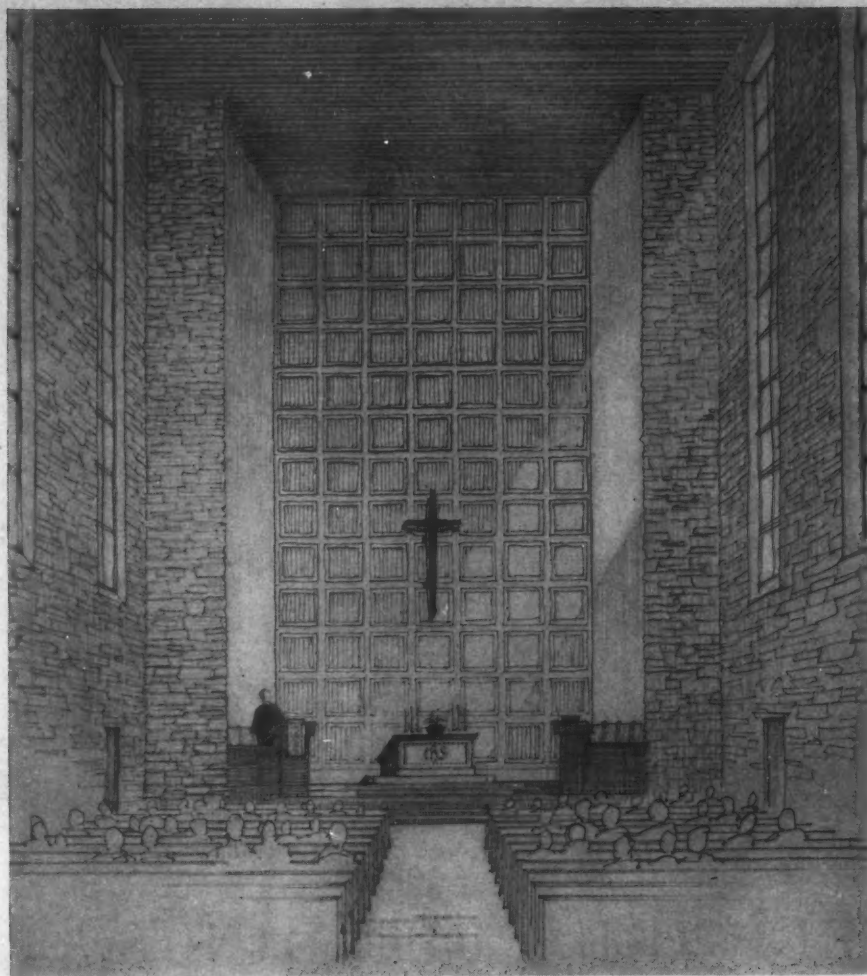
By E. M. Conover, Director, Interdenominational Bureau of Architecture

TODAY'S unprecedented figures on church building, under way and in prospect, could be evidence of a deep and widespread new religious impetus, posing not only a challenge for architects, but a certain responsibility. Yet many architects continue to be wary of church assignments and, in many cases, for continuing good reasons. There are still too many clients with inflexible notions of what "looks like a church," to the discouragement of religious expression in the best of contemporary forms and materials.

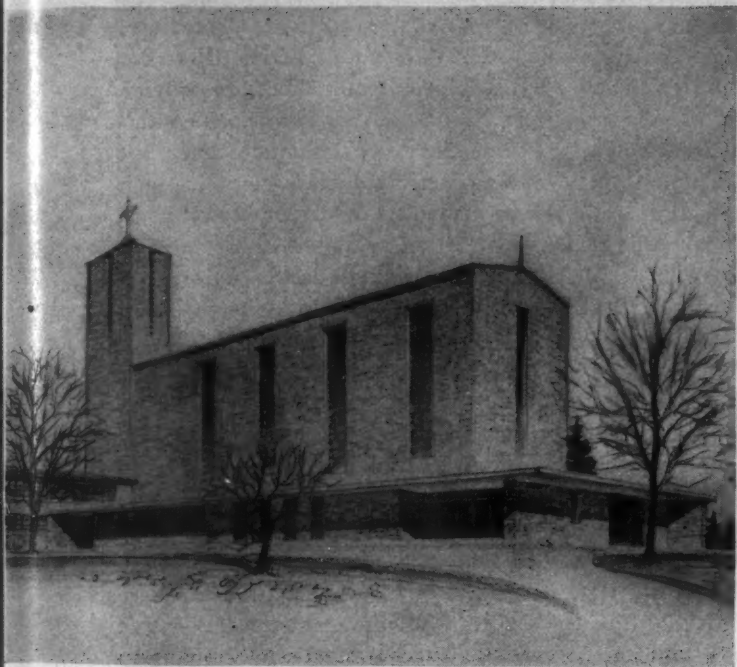
But worse, there are still too frequent instances of a church committee bringing an architect to conference, not only in huge ignorance of his function and what services may rightfully be expected of him, but with

inadequate grasp of the aims and requirements of their own program. Nor is this entirely the fault of the committee.

The Interdenominational Bureau of Architecture, maintained cooperatively by the major Protestant denominations, has tried to spread comprehension of church planning as a distinctly *two-fold* operation. Before the architect ever comes into the picture, the church, through its building committee, should make a complete program analysis and statement in its own language, of practices, objectives, and requirements. And the architect, in turn, should study and have thorough knowledge of this document *before* he commits himself to the job in any way. His possible suggestions



Above and left: a proposed church for a suburban site; Malcolm Graeme Duncan, Arch. Sanctuary will be finished in natural stone with deep smoky blue ceiling; recessed "downlights" will be rheostatically controlled. Full-height grille conceals choir and organ, visible to the minister but not to the congregation. Outside, the long canopied walk permits nine cars at once to unload under cover. Narthex has recessed coat racks; chapel is convenient for small weddings, etc. Broad corridor between social hall and kitchen acts as sound buffer and serving space during large dinners. Above stage is a full-sized scene dock; storage for banquet tables below. Storage units and partitions are movable



as to additions, modifications or omissions in the program will be received with much greater understanding after his clients have thoroughly aired and drawn up their views among themselves. He should expect, and insist on receiving a committee-prepared statement of the program, just as he does a survey of the plot.

Occasionally still, the Bureau receives such requests as a recent one from a committee for suggestions on orientation, "so we can tell the architect, who will visit us soon, how he shall face the building on the lot." By and large, however, programs submitted to us for review show a progressive understanding on the part of church groups as to what is their province, and what should be left to the competence of the architect. Certainly there is much more realization than formerly that each church is an individual problem, not to be solved in terms of stock plans or admired solutions for other programs. This progress is largely due to better public relations from the profession. The more that architects will undertake to write and demonstrate for non-professional enlightenment, the greater will be the popular grasp of their services and objectives, and the way to successful religious expression in contemporary church architecture will be proportionately smoother.

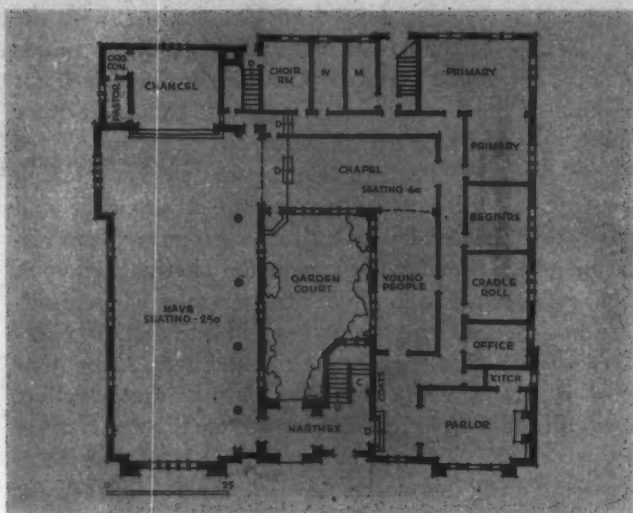
At the very worst, in a few cases there is an attitude still to be overcome, against even simple comfort and

efficiency in churches as somehow inconsistent with the true essence of religion and its practice. These minds must be persuaded that early Christianity flourished not because of the Catacombs, but despite them. In other cases, there may be a disposition to regard provisions for good lighting, hearing, heating and air-conditioning not as concessions to Mammon, but as desirable and even provocative religious adjuncts. However, committee members who favor them in the abstract, when it appears that their adoption in the program will necessitate modification or elimination of sentimentally cherished forms, cling tenaciously to the latter. Enlightenment here may come along the lines of showing that powerful religious expression in past architectures came not as a result of Miracle or Revelation, but through the progressive and innovative use — by men — of the best materials, skills, and methods available to them in their times. This view does not deny that they were inspired by great faith and a sense of supreme purpose, a spirit such as we must have in our own times for like expression. But, also, it does not imply that their forms are sacrosanct, nor that our persisting imitation or tokens of them show us to be similarly inspired. On the contrary, we show in this a poverty, if not a superficiality and dishonesty in our own spirit. I do not believe that the men and inspiration behind Chartres Cathedral, if they were building today, would be nearly so constrained as we tend to be by the example of their own splendid past achievement.

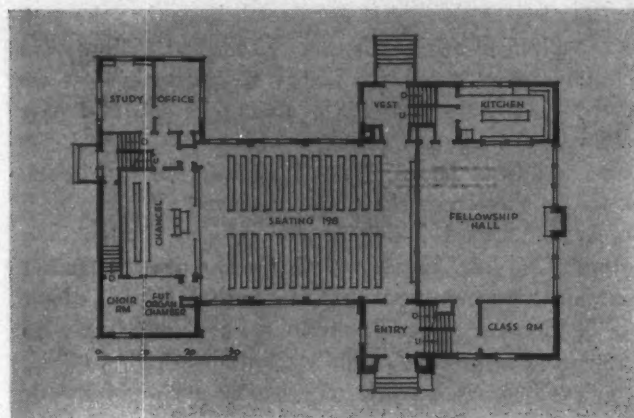
It should not be necessary, in writing for architects, to defend these remarks against inferred advocacy of a purely functional "machine for religion." This is a patent absurdity. Moreover, clients who protest against contemporary treatment that makes their churches look like factories or athletic field houses are not, simply on these grounds, to be charged with archaic prejudices. I believe we are capable of creating a contemporary religious architecture that transcends industrialism as notable churches of the past transcended secular aspects of feudalism. Our churches need have no more earmarks of the machine and latterday materialism than Chartres has battlements and crossbow embrasures.

In a number of cases still, the process of enlightenment may require that the architect draft an outline for the building committee's guidance, to produce a realistic analysis and statement of the church program. In the Interdenominational Bureau's capacity as consultants for this phase, we recommend the organization of data under a system of such headings as: Worship; Education; Social and Recreational; Administrative and Residential; General Information.

Worship. Typical data under this heading comprise present average attendances at morning, evening and mid-week services, with maximum figures for peak occasions such as Christmas and Easter, giving the architect a basis for judging committee estimates of future seating requirements. Validity of these estimates will depend on the extent and accuracy of study given by the committee to the influence on regular worship attendance of new neighborhood conditions, and of new edu-



Above: chapel partitions and altar in 1st Congregational Church, Highland, Ill., are removable, to accommodate main-area overflow. H. A. Brand, Arch. Below: fellowship hall in Mock's Crest Evangelical Church, Portland, Ore., has glass partitions and loudspeakers, for similar adaptation. D. W. Edmundson, Arch.



cational, social and recreational features contemplated in the program.

Very few committees still show expectations in their programs of future worship facilities in terms of their largest estimated gatherings. But even two services on Christmas and Easter frequently will not take care of the numbers at these peaks, and some arrangement involving other-purpose spaces adjoining the nave will probably be necessary. The plans above show treatment of this problem in ways that have been successful in existing churches.

Further economies in space handling are possible through the provision of a separate chapel appropriately scaled for worship by Junior and Young Peoples' groups, which may be used also for the lesser adult services of evening and mid-week. Such a chapel (see top plan) is often further adaptable for handling peak-occasion surpluses, and can be used as a "worship center" for religious training by groups from adjoining classrooms.

Also to be considered under the heading of Worship are such additional factors as: requirements for bap-

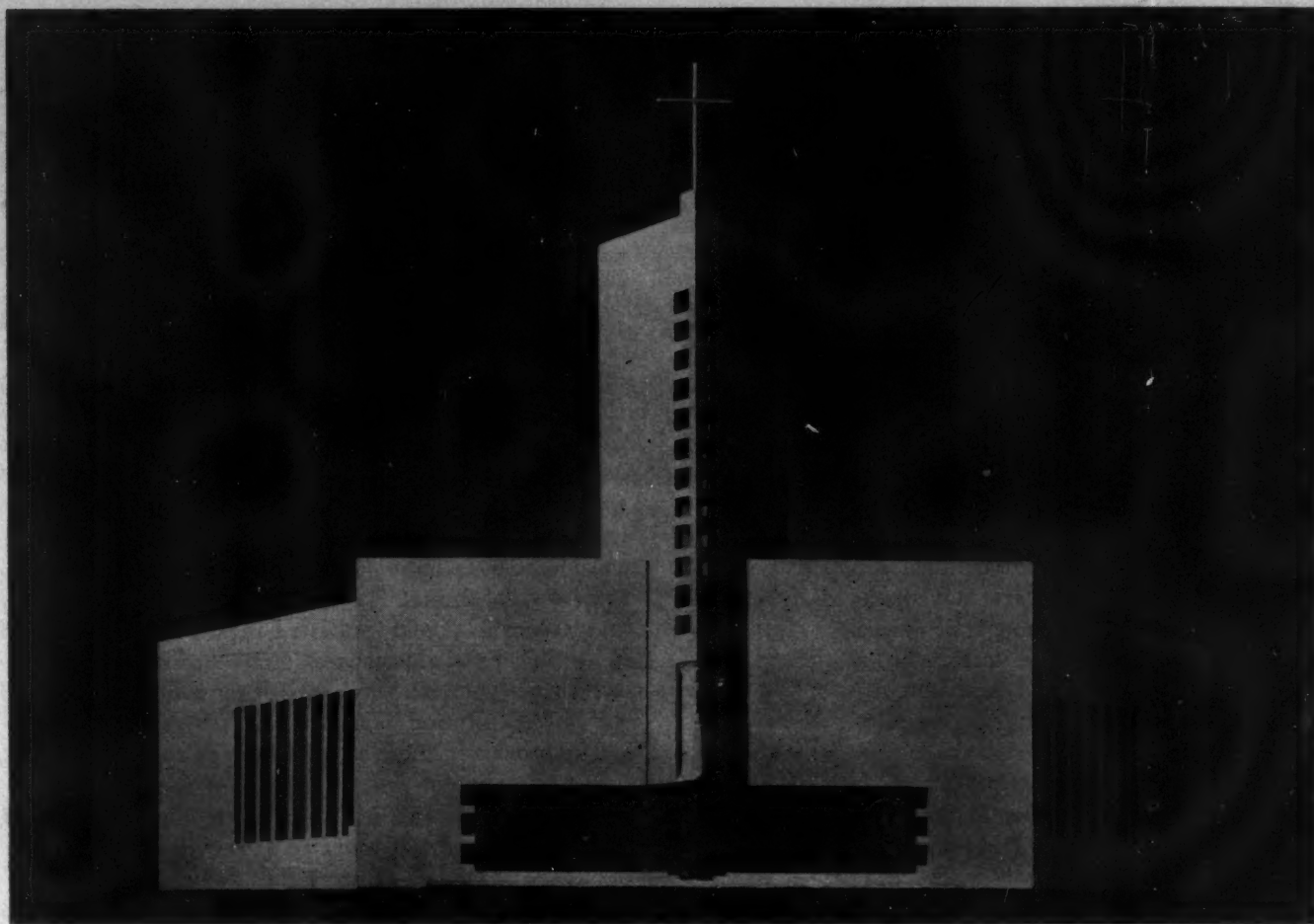
tism; robing rooms; provisions for organ and choir.

Education. The most extensive departmental breakdowns for religious education are generally of this order: Nursery, for children two and a half to four years of age; Beginners (Kindergarten), for four- and five-year-olds; Primary, six to eight; Junior, nine to 11; Intermediate, 12 to 14; High School, 15 to 17; Young People, 18 to 23; Adults, 24 and over. The architect's efforts to provide for these groups, either separately or in various combinations, will depend on estimated attendances and what are determined to be practicable class sizes in each category. Problems of space allowance per person complicate this phase of planning, with standards ranging from 20 to 30 sq. ft. each for small children to 6 to 7 sq. ft. for adults in assembly formation. Instructional methods also are factors — the desirability of desks or round-tables; the use to be made of films and similar aids; facilities for project making and displays, etc. The majority of committees today are anxious to incorporate every possible up-to-date feature and device under the educational heading as a means of strengthening the entire religious program.

Social and Recreational, or Fellowship requirements. Although most desirable, it is seldom that separate provisions can be made for all the elements under this heading that contribute to congregational solidarity: spaces for basketball, volley ball, table tennis; social parlors with fireplace and kitchenette for small gatherings; large dining rooms with adjacent kitchen for total occasions; auditoriums with stage, dressing rooms and movie-projection equipment; meeting rooms for Scouts and other organizations. Successful planning by the architect for convertibility of spaces, from one social or recreational use to another, depends on the accuracy with which the committee appraises future participation in the various activities and the possibilities of staggered scheduling.

General Information includes such data as car-parking requirements; conditions of water service, gas, electricity, sewage disposal; and other general factors of site and neighborhood. Perhaps most important under this heading is information on the state of the budget and financial plan.

Limited budgets call frequently for an increment plan, whereby most-needed units are built first, to be enlarged or added to in the future with increase of membership and congregational affluence (see page 112). Also, it is often on the basis of budgetary limits that the best arguments can be advanced for the use of contemporary means. Faithful and durable accomplishments of traditional appearances are expensive, and the conditions of long service, hard usage and mellowing with time are usually not to be met in surface approximations. Every instance of persuasion that more of the desired objectives in a program can be attained through discard of superfluous trappings in favor of the economies inherent in modern materials and methods, and the power and grace potential in contemporary design, brings us closer to a church architecture showing an inspiration at least equivalent to that in great periods of the past.



Hedrich-Blessing Photo

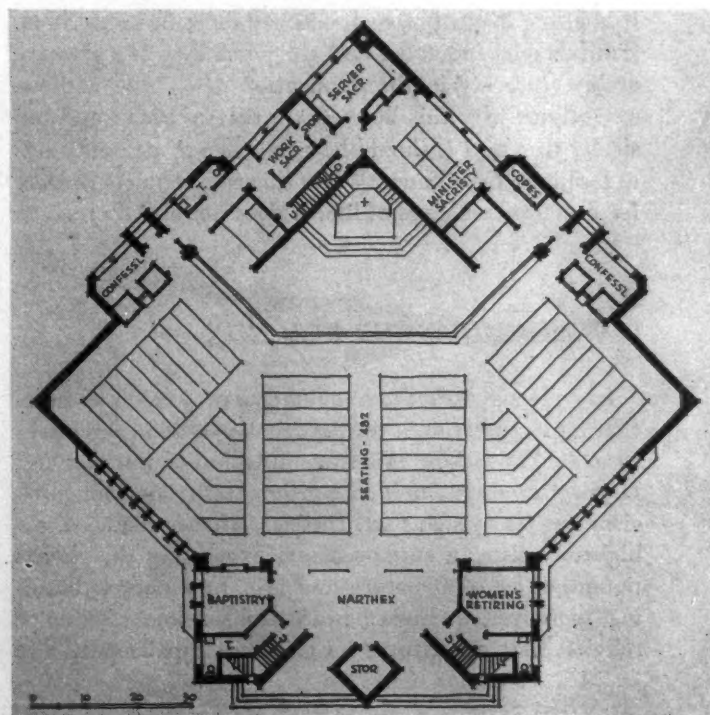
TOWARD A NEW ARCHITECTURE OF WORSHIP

By Barry Byrne

THE challenge of any major crisis in national or personal affairs quickly reveals how unsubstantial is our crust-like surface of materialism. The majority of our people still believe in God, in the existence of the soul and its immortality. Fashion has eroded that belief, and an often shoddy intellectualism has obscured it, but it still exists at the core of our national life.

In an article on the design of churches this is essential to recall, for it is the belief in God, and the projection of that faith into forms of worship, which cause churches to be built, whether they be Jewish, Catholic or Protestant. This belief, therefore, is primary to the development of a creative religious architecture, and the center from which esthetic growth must come if churches are to achieve an architectural distinction bespeaking unity of structure, purpose and form. Architecture based on

Chapel of St. Thomas More will be part of Catholic Student Center at University of Iowa. It will be steel frame, stone-faced, with large balcony. Barry Byrne, architect



literally rendered structure alone results in chill and unsuitable aridity; such a literalism can only create skeletons, or frameworks of architecture. The religious purpose of a church must be sensitively comprehended and expressed, to invest the skeletal, functional elements with something like a living quality.

I do not think that this contravenes the dictum of Louis H. Sullivan, predicating architectural form on function, for his building designs are ample evidence that he regarded function as including structure *and* purpose. The latter, he must have held as possessing both practical and symbolically expressive aspects. In separately emphasizing these two components of function, I hope to accentuate the difference between the arid literalism of contemporary doctrinaire functionalism and the greater thing, an esthetically resolved, living, contemporary architecture. For doctrinaire functionalism is an off-shoot of that phase of cultural disintegration reflected in many recent art movements of European origin. As such, it has no particular relevance to the problem of a creative architecture in America, at least as relates to its expressive character.

On the other hand, it must be admitted that the analytical character of the best of European modernism has definite value. Developments of a spatial nature, as shown in plans; the simplification of form; and the use of contrasting elements and masses, are all to the profit of architecture. However, I believe the rather self-conscious and too uniform stylistic manner that has accompanied these developments cannot be considered a profound or lasting achievement. There is a good deal of evidence that what is merely a manner of design has been elevated to the plane of a universally applicable architectural prescription. The acceptance of this idea by architects at large would be fatal to progress.

European modern art and architecture derive their force from a reaction against academic forms of art and architecture. This makes them rootless, in the last analysis, for it limits their field to the realm of art, whereas it is in life itself that such activity must have its roots. Sullivan once indicated that the possibility of a creative architecture lay in the application of a "rule without exceptions." By this he meant a rule so broad and basically true that it should be applicable to all conditions of building, by all men. While this rule requires respect for function, which is of life, it does not end there.

SENTIMENTALITY AND REACTION

In contrast, it is the imaginative projection of function into expressive form that makes a living architecture. And in seeking this transmutation of material and physical qualities, neither sentimentality nor romanticism can play much part. Instead, what is required is a higher realism, a super-realism, expressing the design potentialities of structure and use. In a church building, moreover, we must beware of a sentimentalizing of religion that constitutes its grievous impairment. The

reflection of it in a church woefully lessens its quality and even brings into question its right to be considered a piece of valid architecture. Sentimentality, and the false standards it has imposed on public taste, have been over-reflected in American church buildings, but growing understanding of the difference between genuine religious structures and sentimentally impure types is most encouraging. The desire for growth of a creative church architecture is apparent, almost more so than the present ability of American architects to satisfy it.

In opposition to sentimental or romantic religiosity, modern Europe furnishes numerous examples of churches which are a reaction against it. Our tendency to imitate European models particularly necessitates a critical estimate of these buildings which, generally speaking, divide into two types. One of these is no more than a simplification of medieval types, allied to considerable esthetic knowledge of primary historic architectural forms. The work of Domenicus Bohm is an instance of this at its best. I regard its contribution to the future of church architecture as negligible; the central problem of church design for a modern society will find no solution in such work. It begs the question.

The other and more significant type represents a return to function as a basis, often in a doctrinaire manner, in the mode of stylization promoted by the Bauhaus in Germany and the work of le Corbusier in France. Occasionally these last succeed in being true buildings and to that extent, at least, they have virtues of a basic kind. It is a less fortunate aspect of such work, however, that there rarely appears any fundamentally new resolution of the elements of plan, and the buildings in question do not often succeed really in becoming churches. Nor, as a well-known ecclesiastic has stated, is this achieved by adding a cross, much as if it were an afterthought, as a sign to advertise the purpose of the building. Churchliness, in contrast, must be integral in the very fabric of the architecture. Its note, if one may generalize, should be that of gracious austerity. Barrenness, or meagerness, does not achieve this.

A reasonable test of any such design is to temporarily eliminate obvious and identifiable symbols like the cross, and then to judge whether the design is religious in character. But the test has no value in cases where comprehension of the religious in architecture is strongly conditioned by recollections of medieval forms. And this, unfortunately, too often clouds the basis of critical judgment of efforts at contemporary design for churches. Such an architecture must be judged on its own merits as a religious product of the present, not of the past.

The failure of most of European modernism to achieve a satisfying churchly character is often mistakenly assumed to be inescapable and inherent in the grammar of form that has mushroomed up about it. I have found this idea to be widespread and to exist particularly among churchmen whose interest in contemporary art has led them to visit modern European churches. I may add that I have yet to find one of these personages who did not fully appreciate the desirability,

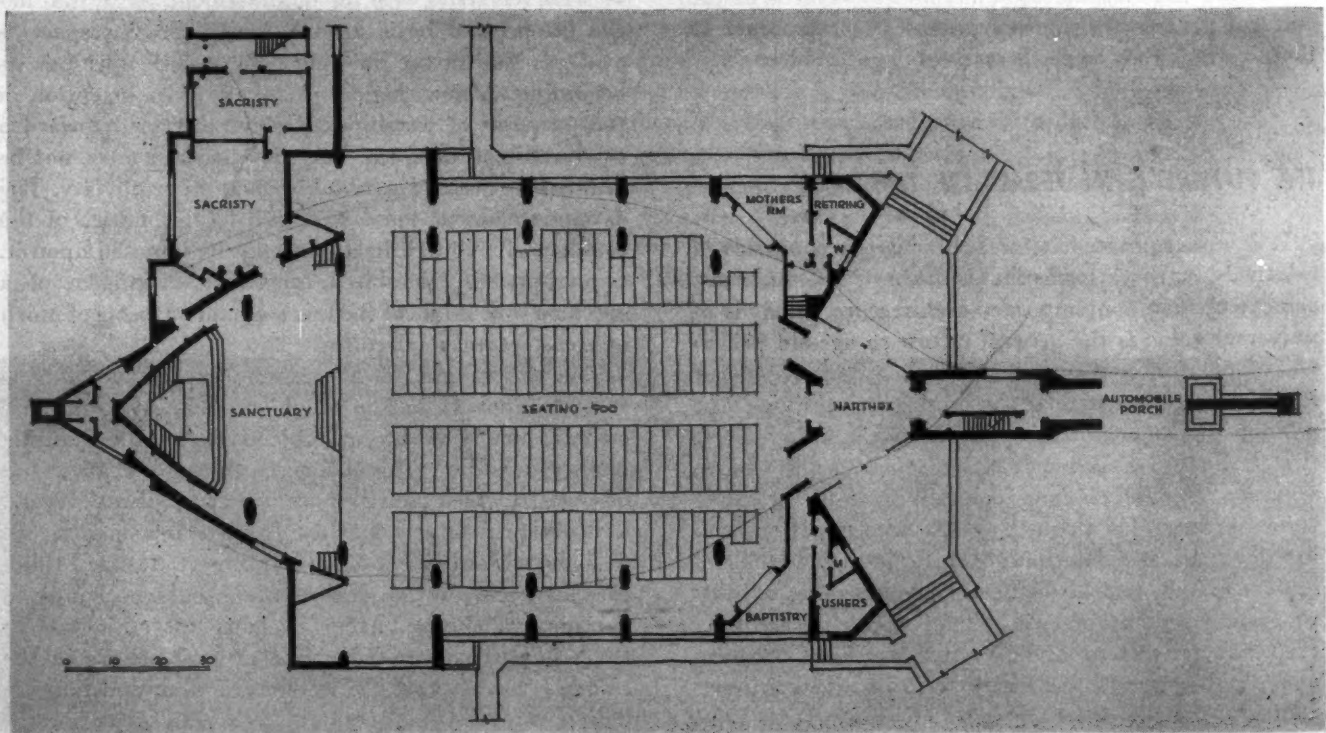
even the necessity, of a contemporary style in church architecture. They were disappointed only in not finding one that approached adequacy. That their view in many instances was affected by preconceived ideas must be granted, but I must in all honesty agree that the design of many of these churches demonstrates an unbalanced preoccupation with the qualities of industrial buildings. In the between-wars period, industrialism itself attained the proportions of a fetish in Western Europe and the Soviet, and this has had its reflection in architectural efforts. The relative honesty of the structure of a modern factory building is an admirable thing, and what it reveals in this respect is basic to one aspect of architecture. A church, however, is not a factory nor can the design of it be approached as if what applied in one case fitted with the other. A like honesty, religiously expressed, would be right in a church, and it is a regrettable fact that it so rarely exists there. A taste conditioned by a lack of honesty in architecture, we can be certain, will find the presence of honesty a rather trying circumstance in any case. Such a conditioning of taste probably, too, explains the attitude of some critics.

VALID AND SUPERFICIAL MODERNISM

The general skepticism about the possibility of successful contemporary design in churches is partly due to a failure to discriminate between the more valid modern design and its superficial imitations. As this superficial



St. Francis Xavier Church, Kansas City, Mo., will be steel frame with exterior stone facing. Barry Byrne, Architect; Joseph B. Shaughnessy, Associate. Models for this church and Chapel of St. Thomas More were by B. J. Parks and Z. H. McClanahan



modernism exists in America in great quantity, it unfortunately influences people's view of the entire trend in style. One would be over-dignifying such design by ascribing to it the qualities of a legitimate architectural grammar. As a matter of fact much that is current in form, even in relatively good work, is only in the nature of clichés. Bad modernism, moreover, is made up almost exclusively of clichés, used as short-cuts in the design process to achieve a specious effectiveness and to cover a lack of knowledge and imagination.

MODERNITY IN TRADITION

As true church architecture must be of enduring character, linking the present to the past, as well as to the future, the value of this superficial modernism for church use is rightly brought into question. Bad architecture is only bad architecture. The label of modernism does not change that badness, and skepticism as to its enduring value is entirely warranted. While we can only design in our time and must accept the limitations that this imposes, a true church, and in fact all true architecture, is actually timeless. It is not, therefore, a matter of fashion. It must endure in common respect through generations, and bad modernism does not endure in respect for a decade. At its esthetic best it is only effective, and objective effectiveness is itself an architectural vice.

There is no formula, no quick method, for achieving an architecture expressive of religious purpose. It is too profound in its implications to permit this, for it is related to long-range social aspects of life that mature slowly. Successful relationships, in this respect, of past architectures that were religious in type have made them endure in their implicit quality, and as records of the cultural periods which they graphically represent. In these periods they were themselves once "modern."

THE FUTURE IS IN TERMS OF THE PAST

It is not, as stated before, the current congeries of relatively synthetic forms that is the basically important achievement in contemporary architecture. What is of universal value is the general return to age-old principles of exterior form as the esthetic resultant of interior space, achieving architectural integrity through the relationship and expressiveness of the building fabric that encloses it. Although the Romans, as we know, separated themselves fundamentally from the architecture that preceded them, by their preoccupation with interior space as a determining factor in their baths and basilicas, the logical esthetic development of this profoundly revolutionary idea had to await the architecture that grew up around Byzantium, where structure and purpose were fused into new forms, in which elements of interior space determined exterior mass and

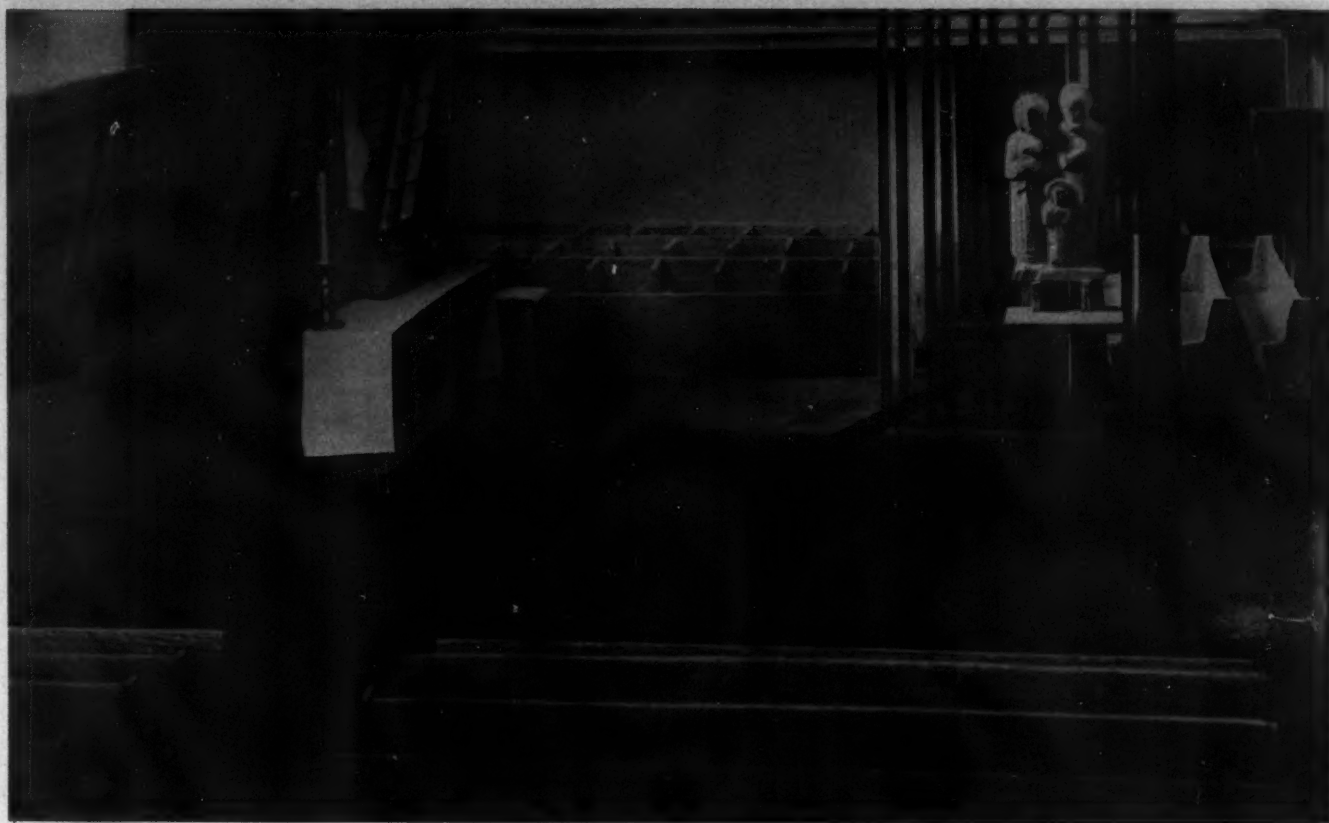
details. It was, furthermore, the exemplification of this idea that produced all great church architectures, down to the decline of the medieval culture. The innovation appeared in Rome, the consummation in Byzantium. And in returning to this basic and far-reaching architectural conception, we are taking our rightful place as heirs of Mediterranean culture.

Contemporary architecture of the significant kind has added to this concept, or rather, it might be more exact to say, has developed it. The revolutionary element in Frank Lloyd Wright's plans lies in his new use of this old idea, and, as evidence amply indicates, his application possesses a natural dynamism that has influenced, if not determined, a world-wide architectural trend. Beyond this achievement, he makes a new and significant departure, for he demonstrates that interior space in architecture is a subdivision of general exterior space. His plans unify one with the other. He, therefore, in a continuity of tradition, has enriched and added to it in a fundamental way that is important in what it portends for the future of architecture. In this, of course, I am particularly thinking of potentialities rather than of accomplished form. His architectural forms are his own; this innovation is his bequest to the future.

PLAN: THE BASIS FOR INNOVATION

Granting the special facts of worship and its requirements of seclusion and detachment from the material world, I would say that the future of a vital church architecture largely depended on the application of this concept of continuous exterior and interior space, combined with fresh resolutions of interior space to clarify and intensify given forms of worship. All of this, it will be seen, has to do with the building plan, for in that lies the intellectual basis around which interior space is evolved. And in the building plan, architecture has its beginning. A new, logical plan having its inception in the purposes of worship will inevitably lead toward a new architectural form, but the approach must not be vitiated by desire for trivial innovation or novelty. The dynamic element must be found in the nature of the problem of a church itself, and not be imposed upon it. Super-imposed, simulated, muscular dynamism of a specious type is one of the less fortunate aspects of much of architectural modernism.

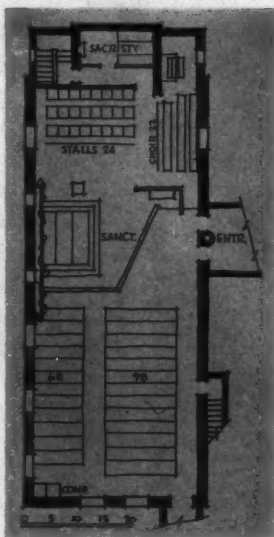
The attainment of a symbolic expression of worshipful function in the whole church, by legitimate esthetic means, is the real objective. And an enduring quality should be of vital concern to us, for the worship of God, to which churches are dedicated, is a profound and not a transitory matter. There are some who will disagree with my ideas of what is important, but I think they can scarcely be persons who would be happy in designing a church. This article is not addressed to them but to persons who, like myself, believe in the primary necessity of the worship of God, and hope to design in a way that is suitable.



P. E. Guerrero Photos

CHILDREN'S CHAPEL, BROOKLYN

Joseph Salerno, Architect



SCANT width between existing walls encouraged the use of a centrally-located altar in this new chapel for the Angel Guardian Home. This arrangement, affording better view of the Mass and bringing the entire gathering into closer relationship with the essential elements of worship, is increasingly favored for general adoption. In this case it also makes the altar immediately visible from the main entrance. Sanctuary carpeting of deep green and a dark blue rubber-tile floor will further emphasize the altar's importance. The symbolic living vine behind it will be bedded in white marble. Side walls are slightly canted inward, with cove lighting on top, to give an effect of spread to the ceiling.

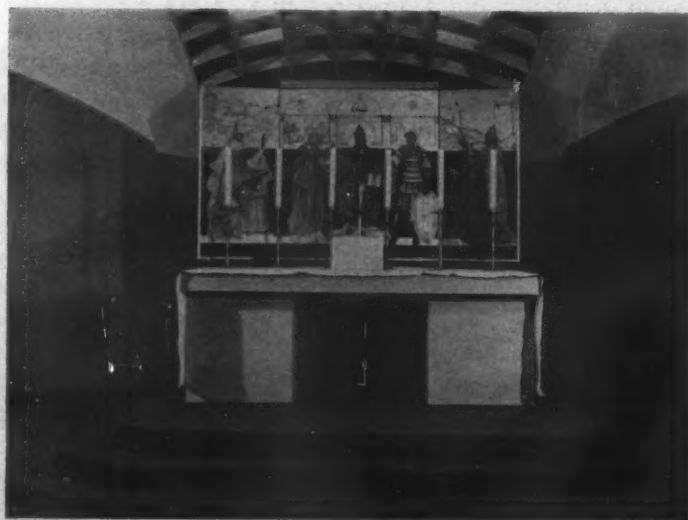


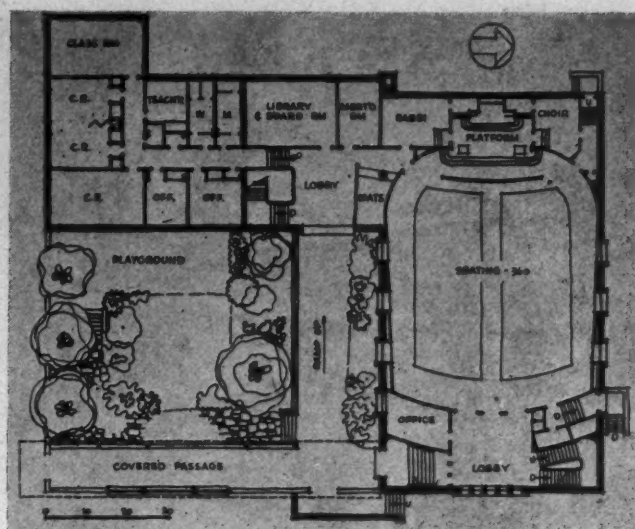
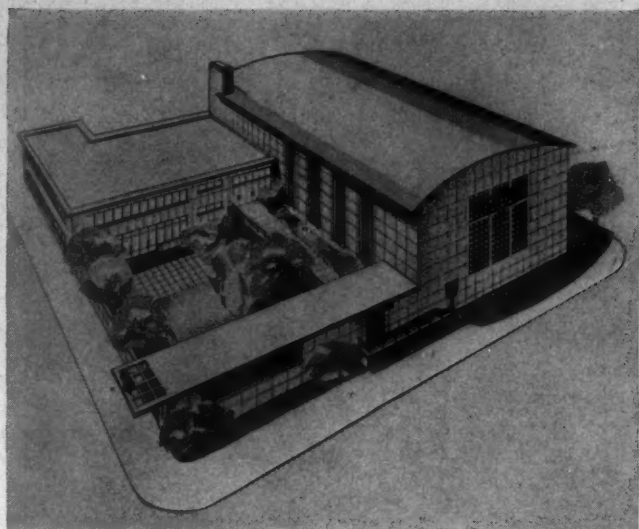


CRYPT CHAPEL, LATROBE, PA.

Emil Frei, Designer

LIMESTONE slab altars in the crypt of St. Vincent's Archabbey follow the general key of extreme simplicity. Eventually each station will have a triptych similar to that over the main altar by Jan Heryk de Rosen. These will be the principal color notes, set off by the black and white tonality of Emil Frei's windows, typified at right. Shades of the glass range from bluish to silver grey; details are a black vitrifiable pigment.





"AN AMERICAN SYNAGOGUE FOR TODAY AND TOMORROW"

With this statement of theme, the Union of American Hebrew Congregations is currently holding a series of conferences "as first steps in the direction of well-planned and distinctively Jewish buildings, avoiding the false traditions of the past." The opinions given below were expressed at the initial session, held recently in New York City. Professor Franz Landsberger of

Hebrew Union College is Visiting Consultant in Architecture to the U.A.H.C. Harry M. Prince, A.I.A., is the organization's regular Technical Consultant; his proposal for a medium-sized synagogue (above) is one of several shown at the conference. The notes by Percival and Paul Goodman appeared originally in "Commentary", published by the American Jewish Committee

Franz Landsberger: "It was the synagogue which first suggested the concept of a congregational house of worship, adopted by Judaism's daughter religions, Christianity and Mohammedanism. But as Christians and Mohammedans continually increased in the size and number of their communities, and as the Jews were scattered further among them, synagogues were built according to the various architectural patterns of the non-Jewish world. The synagogue in Kai-feng-fu in China closely resembles the pagodas of that land. Though original in conception, the synagogue never developed a form or style of its own. In the middle ages, Moorish and Gothic synagogue styles were expressive of the spirit of the age, with which the Jews were also impregnated. But with the passing of time we too have changed and cannot return artificially to the past."

Harry M. Prince: "Reform Liberal Judaism in the United States is a vital, progressive movement. It is out of place equally in a Byzantine or turreted mosque, in a Romanesque adaptation, or in a copy, good or bad, of a Grecian or Roman temple. I was recently given a design to criticize of a proposed synagogue for the West that lacked only a cross on top to be a Catholic mission church. The design itself was excellent but it no more expressed Jewish functionalism than a Gothic Cathedral."

Percival and Paul Goodman: "There is a tradition in the synagogue: the tradition of the service, of the sacred objects and furniture, and — to a degree — of the ico-

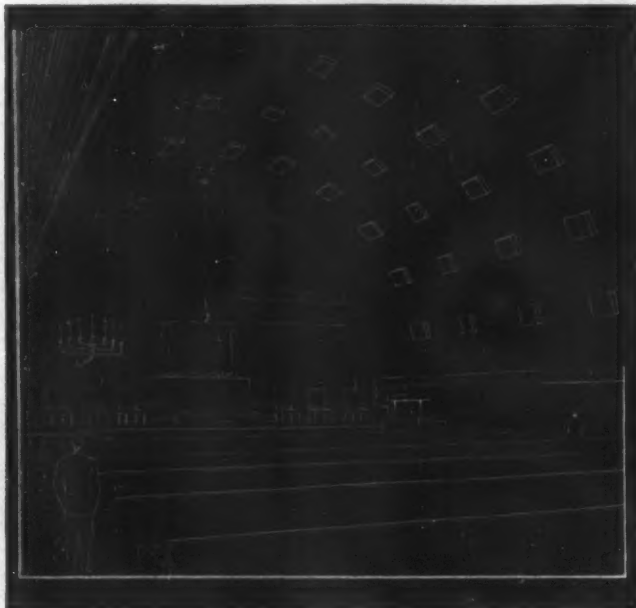
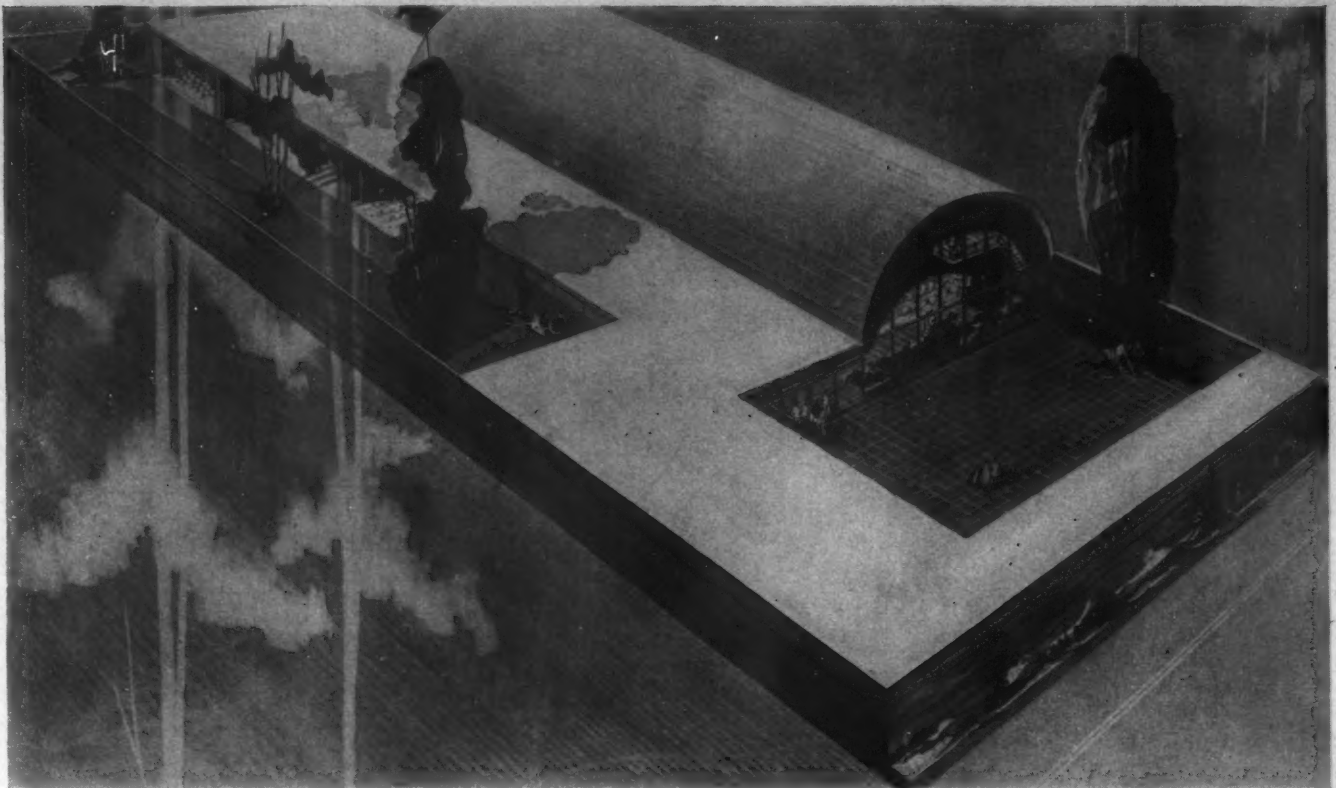
nography — its symbols and decorations. There is also a tradition of the congregational functions of the building. A tradition of synagogue building can be drawn from the tradition that exists, *the service and the congregation*; it cannot be imported where it does not exist, and should not exist, in the construction and style.

"The fundamental act of the service, the reading of the Law, comprises, orthodoxly, taking the Scrolls from the Ark, carrying them in procession to the reading desk, calling up the men of the congregation for the reading, raising high the Scrolls for all to see, dressing them again, and returning them in procession to the Ark. This complicated choreography contains a wealth of material for functional design.

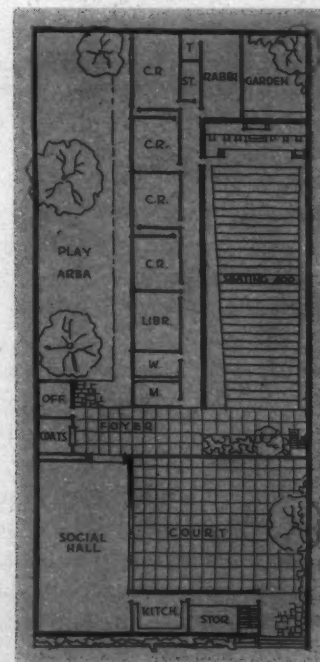
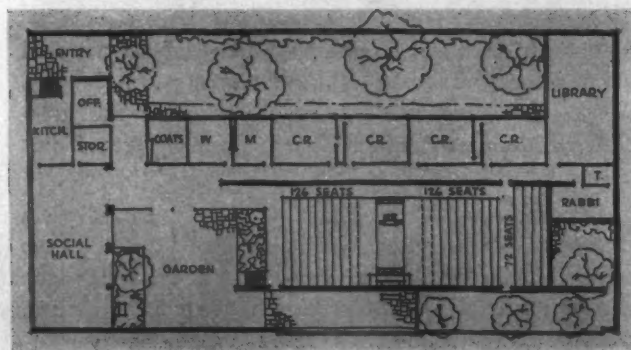
"The outdoor booth for Succoth provides another example of the relation of service and plan. This calls for a garden plot, which during warm weather can serve also for collations, and — perhaps most important — as a milling-round space for such of the congregation as go outside during long services.

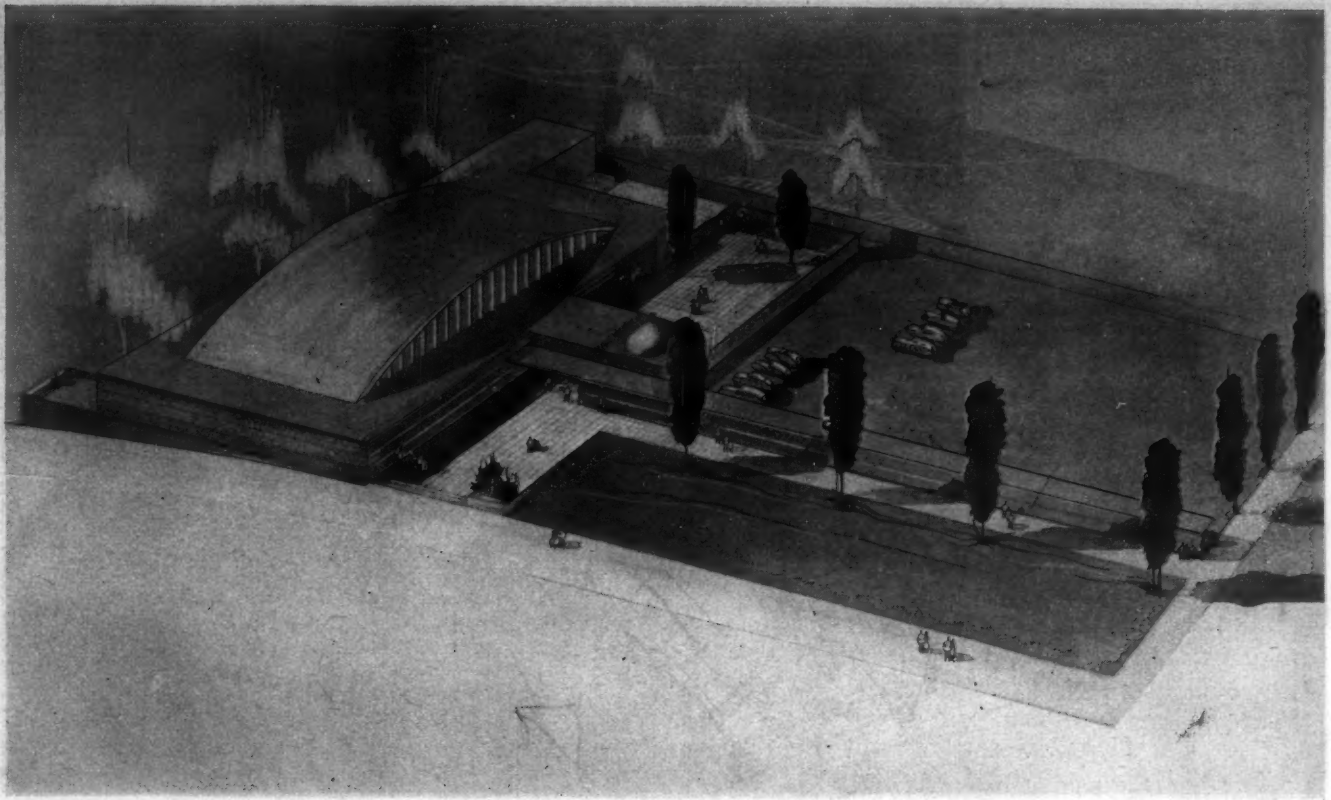
"The service throughout is a reading of prayers and everyone has a book; the light must be bright and white. The visible congregation is of the essence; the mysterious brilliance of stained glass is glorious, but it is not ours.

"Decoratively, the role of the architect is to provide a setting for the sculpture and furniture of the Ark, the desk and light, the Scrolls. Decoration in the synagogue calls for a much closer integration between architecture, sculpture and painting than we have seen."



SYNAGOGUE PROPOSALS IN





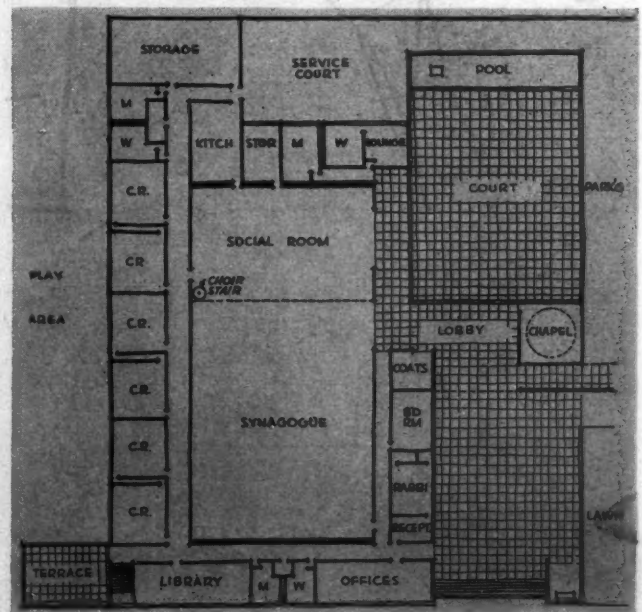
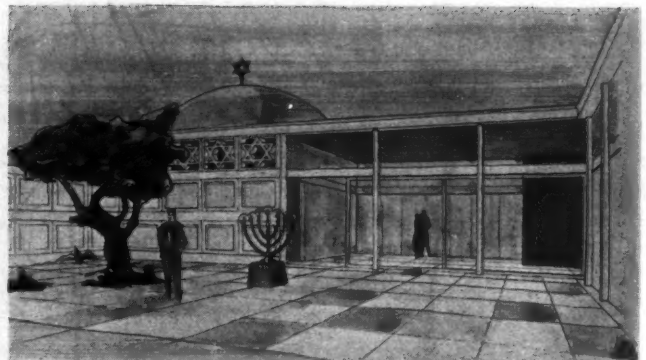
A NEW TRADITIONAL LIGHT

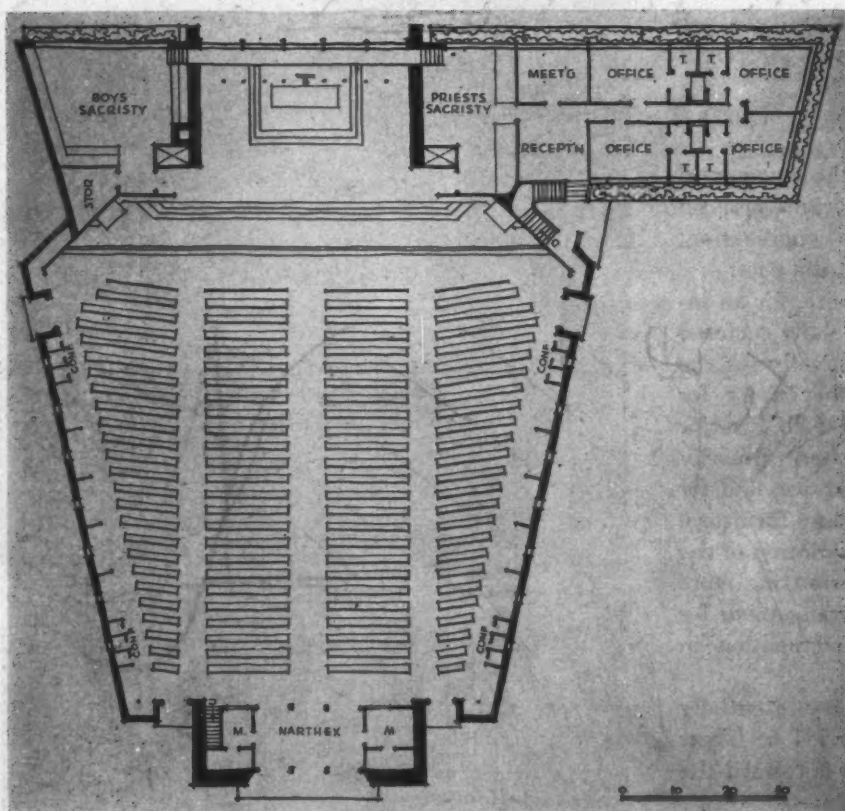
Percival Goodman, Architect

BELIEVING that "there is a tradition in the synagogue" (see page 97), the architect concentrates here on settings for historic functions of ritual and congregation, uncomplicated by external impositions of the past.

The proposal shown on the page opposite, for an interior city location, insures privacy by a solidly enclosed perimeter. The fore court serves ritualistically for the outdoor festival of Succoth, and at other times for gatherings in connection with the social hall. Interior treatment of the worship space is calculated primarily for congregational participation in the service, and for focus of attention on the sacred symbols and furniture. The plan at bottom of the page shows a variation of the same elements suitable for a location permitting more outward contact, and a variant seating arrangement for more intimate participation by the congregation in worship.

Plans and perspectives on this page show essentially the same elements and relationships carried to larger scale for a suburban site. The detail view is toward the lobby and chapel from the interior court.





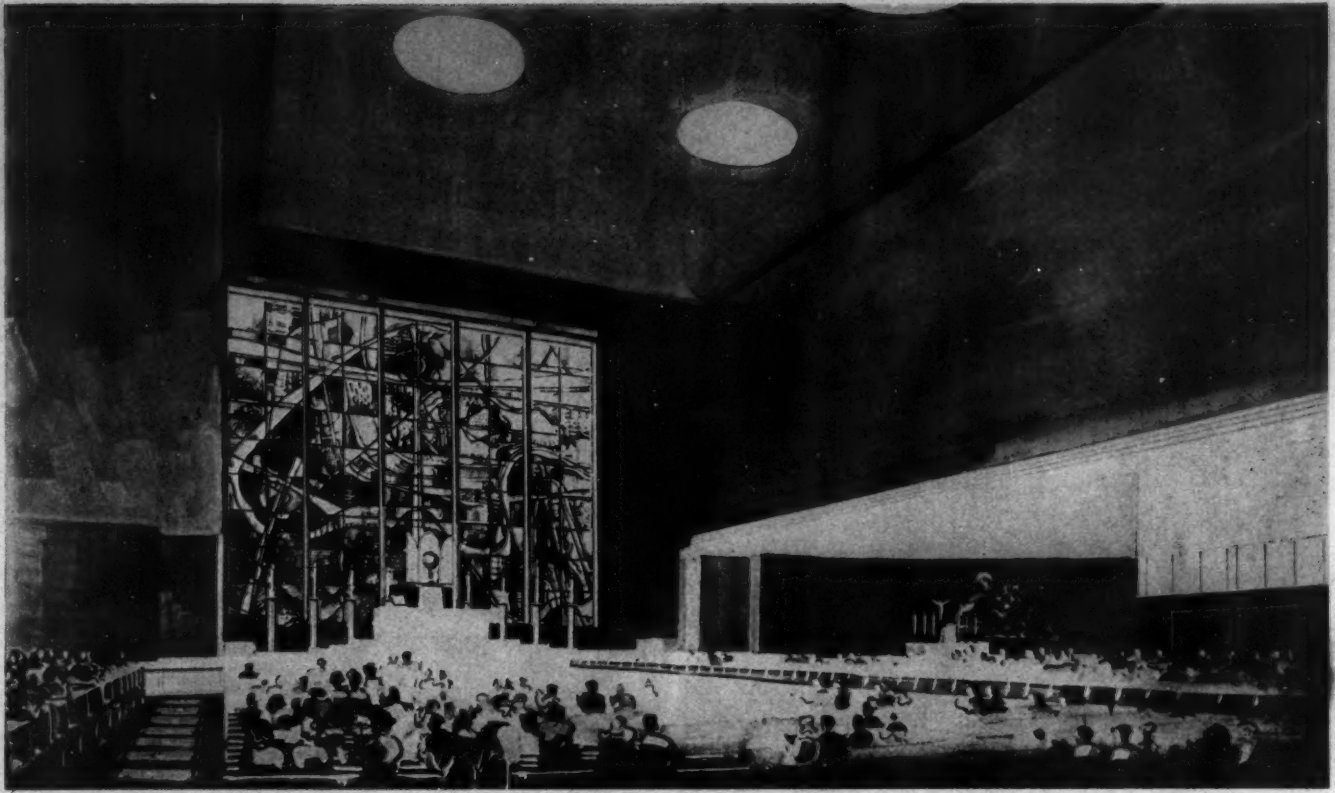
ST. ANN'S CHURCH, ST. LOUIS:

Joseph Denis Murphy

Architect

The nave, seating 850, is arranged so that every seat is within 105 ft. of the altar, with a full and unobstructed view. The floor slopes slightly toward the sanctuary; central ceiling height is about 26 ft.; side heights, about 13 ft. Central portion of the nave is daylighted by round skylights; side portions by continuous windows over the confessionals and shrines. Night lighting is from concealed sources.

Exterior walls are of smooth-finished Indiana limestone. Over the main entrance is a statue of St. Ann and the child Virgin

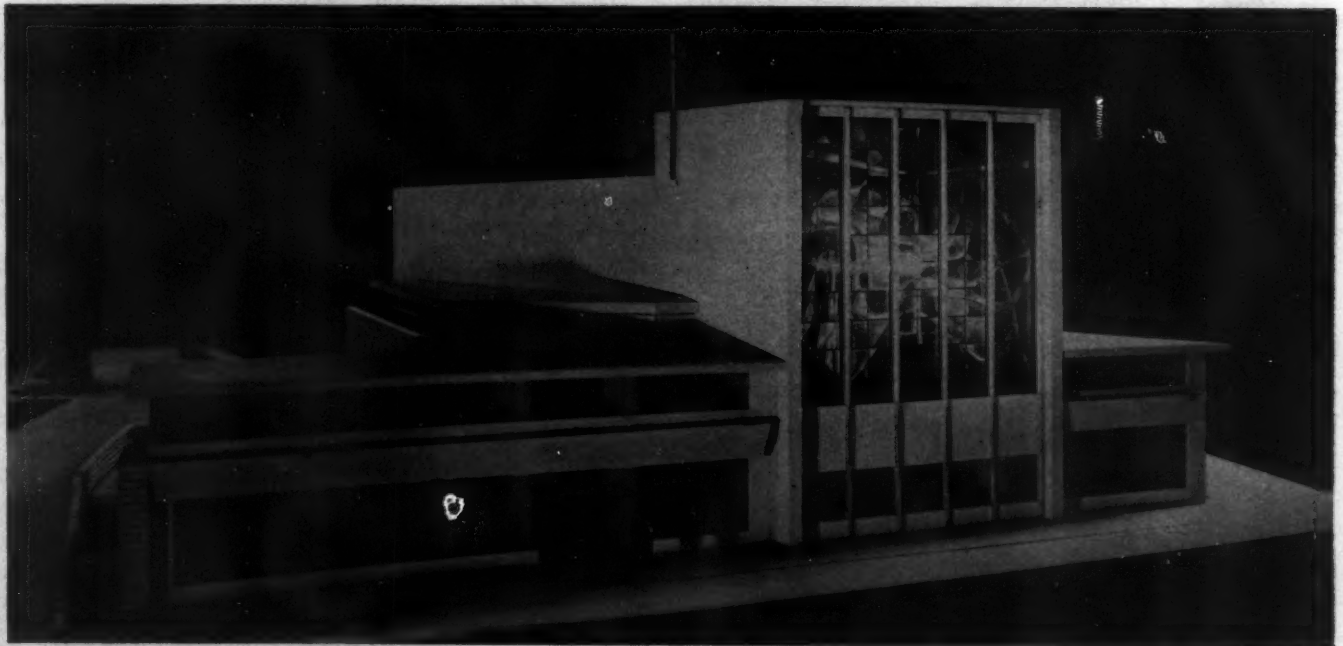


NEW DEPARTURE WITH AN ANCHOR IN TRADITION

CONTINUITY of tradition will be maintained in this new church for St. Ann's Parish in Normandy, a suburb of St. Louis, by retaining the old tower. At its base will be a chapel using stone and other materials from the original structure.

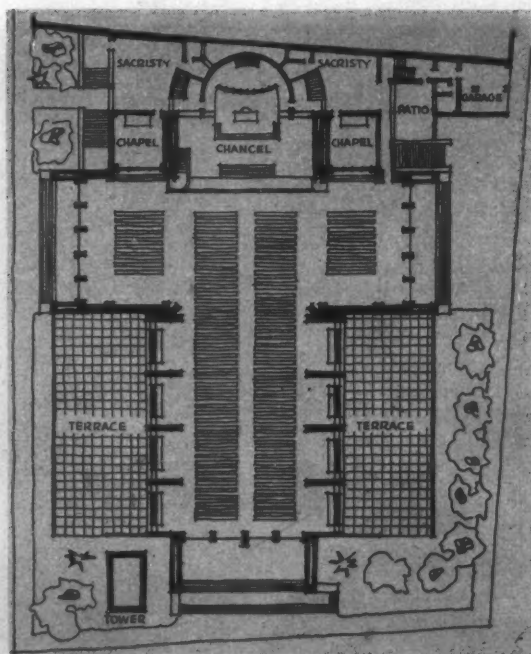
"The design of the new church," says the architect,

"revolves internally and externally about the altar. The sanctuary, consequently, is the highest portion (36 ft.), and the richest materials and effects have been concentrated here." The background window scene of Calvary, with three dominant crosses, will be a tapestry-like depiction in stained glass by Emil Frei.





CHURCH OF LA PURÍSIMA, MONTERREY, MEXICO



THE architect describes Monterrey as a city "with a poor and precarious life, materially and culturally, during all the time of the Spanish colonial period. For this reason, it is practically devoid of the Baroque and Churrigueran precedents to be found in the churches of Querétaro, Mérida and other cities of the territory. Recently its economic and industrial development has been very rapid. At the same time, there has been an intensifying of religious spirit, more favorable, perhaps, to expression in contemporary terms than if there were stronger local influences of traditionalism. Monterrey is really a frontier city, spiritually as well as materially, producing steel, cement and glass. What was desired in this church was truly indigenous architectural and religious expression."

Denying that modernity "aspires to separate itself completely from the past," De la Mora says: "The new religious architecture takes from tradition not the *formal* but the *essential*. If today, we seek to solve a problem in support, we proceed according to principles that guided the best of the old builders, but with new



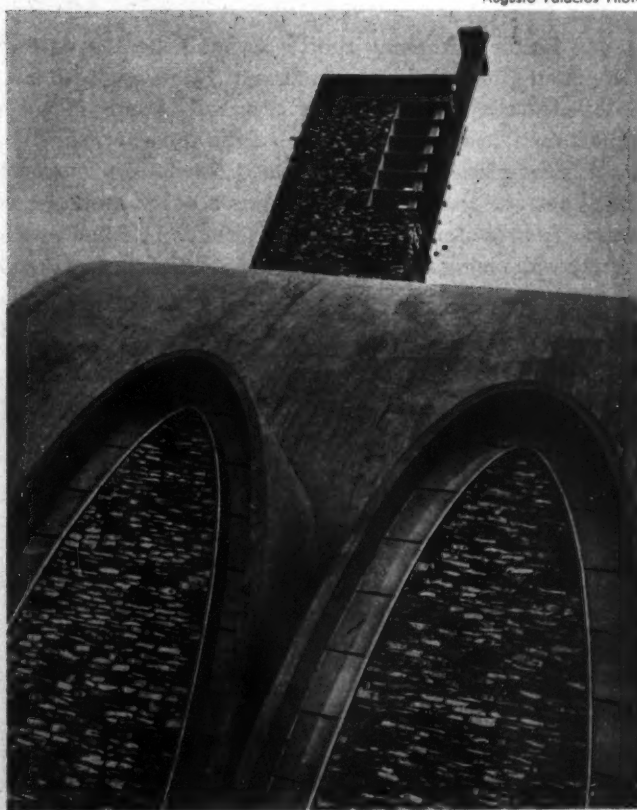
Van Evera Baily Photo

Enrique de la Mora, Architect

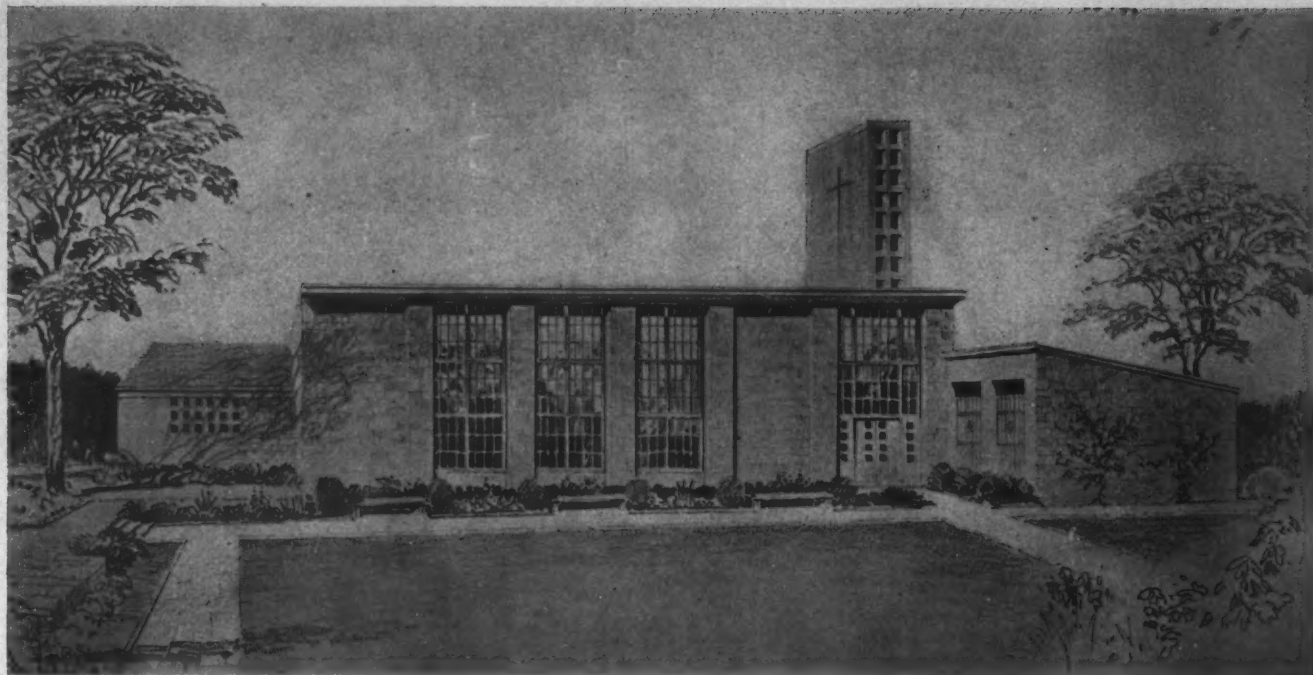
materials and methods at our disposal, we cannot help but arrive logically at new expressive forms.

"Almost any material can be modern. Modernity does not depend so much on the nature of the materials as the manner in which it is used. Tile, for example, is still a splendid roofing material, particularly in this region. When used straightforwardly for this purpose, it is a respectable modern instrument. When used as mere decoration, with no regard for its true functional and structural values, it becomes debased and unworthy. But the modern material *par excellence* is reinforced concrete.

"Religious architectural forms of the past accurately reflected the times and inspiration that brought them forth. In the past century there was degeneration into banality, due undoubtedly to degeneration in religious vitality. What is required today is a stripping bare of trappings. This does not mean impoverishment. There is a greater wealth today than ever before of means by which the new religious spirit can be made to stand out clean, unobscured and strong."



Augusto Palacios Photo

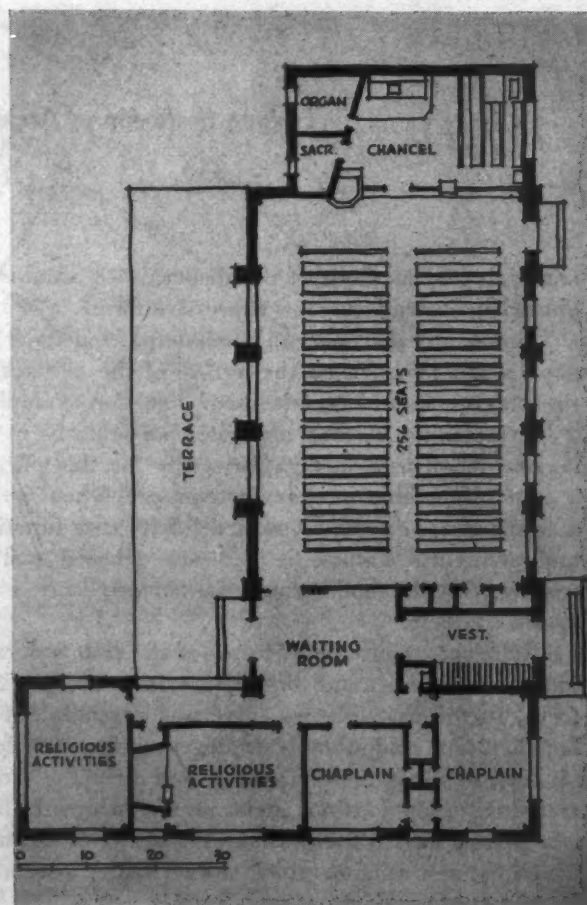
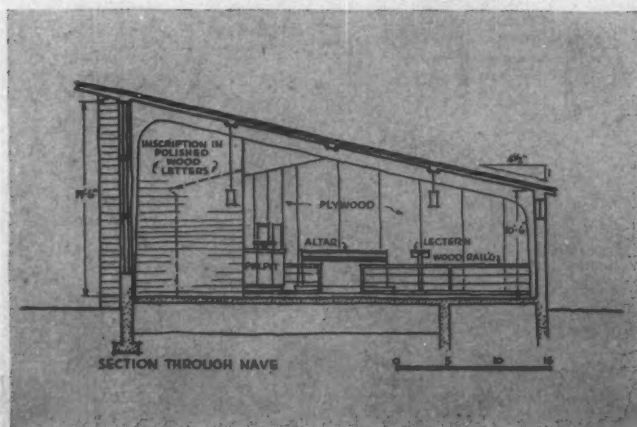


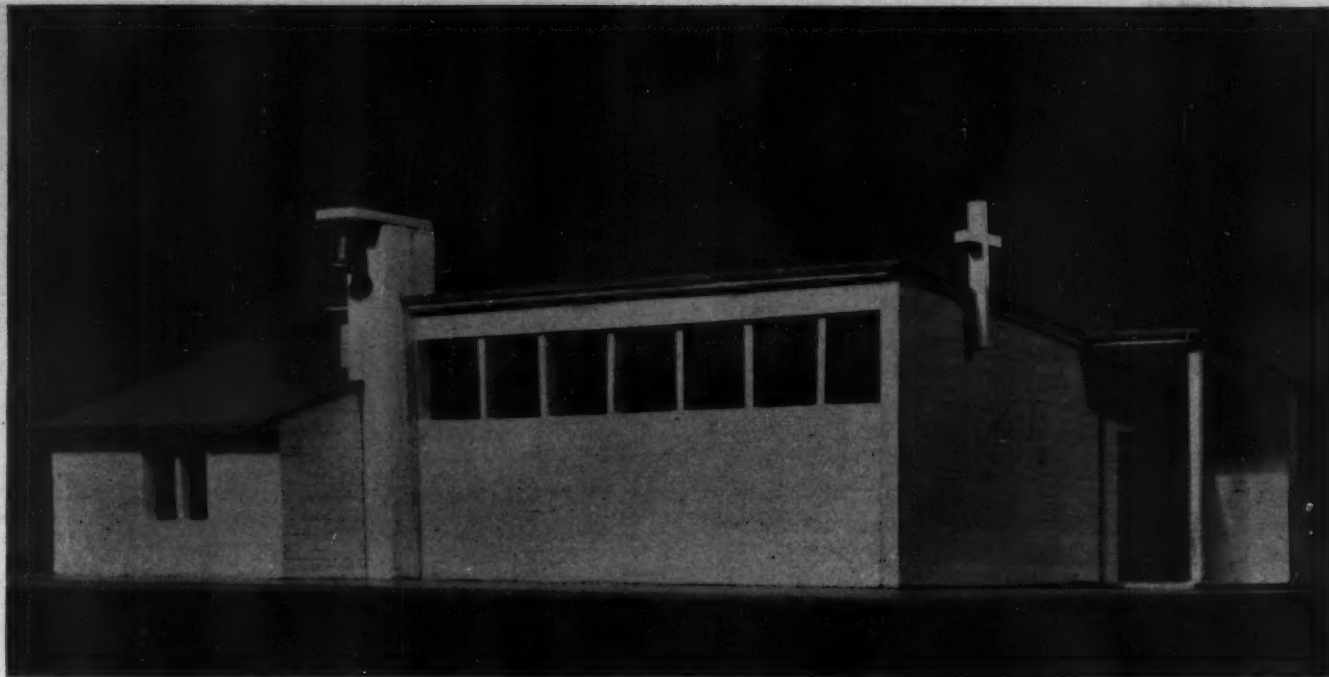
CHAPEL FOR PENNSYLVANIA INDUSTRIAL SCHOOL

Alfred Hopkins & Associates, Prack & Prack

Architects

ONE factor in making the Rockview School environment "as little like a penal institution as possible" will be the chapel, designed to bring the Nittany Mountain Range into spectacular view from the interior. The large clear-glass windows will also overlook a garden and flagstone terrace, to be used as a dais for summer services. Proposed construction is concrete frame and cavity wall, using colored concrete blocks manufactured at the school for walls both inside and out. Trim will be stone, locally quarried by the inmates.





TEN RURAL CHURCHES FOR KANSAS CITY DIOCESE

Julian Whittelsey; Dom Hilary Martin, O.S.B.

Architects

THIS plan was developed, in collaboration with Charlton Fortune of the Monterey Guild, to provide churches from diocesan funds for Catholic communities of limited means. Reversed position of the sacristy (roofed portion, left) and alternate locations for the entrance porch give variety. Tower doubles as confessional booth and as chimney for furnace under sacristy. Choir enters at a lower level behind altar. Specifications were in various materials, depending on local availability; version below is at Harrisonville, Mo.

Charles Brenneke Photo



F. S. Lincoln Photos

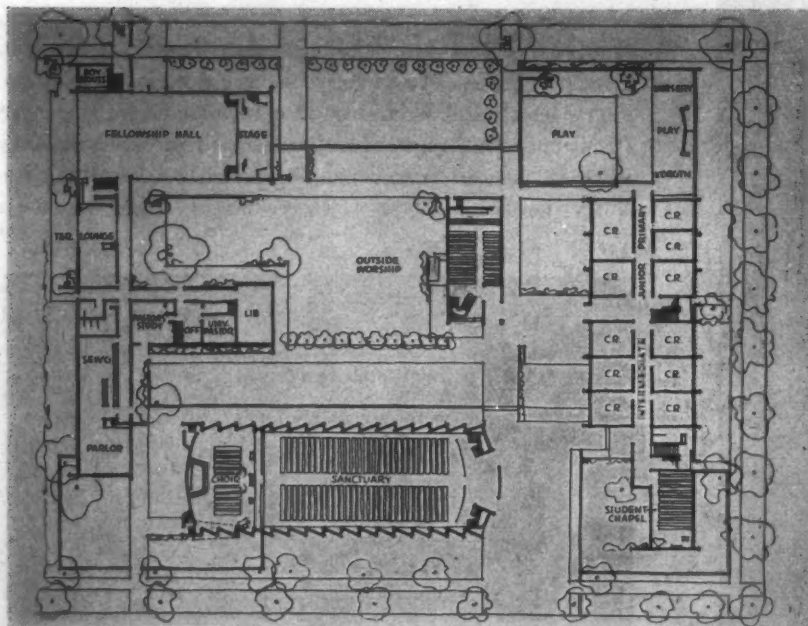
PROPOSED CHURCH GROUP FOR NORMAN, OKLAHOMA

*A Project Study by R. Bruce Miller,
School of Architecture, University of Oklahoma*

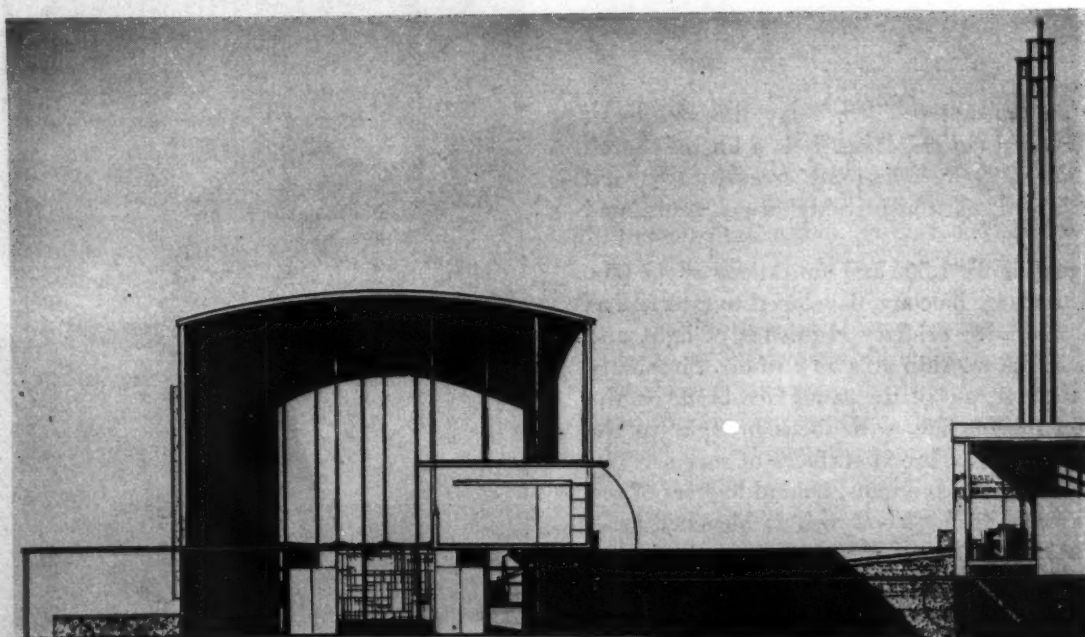
THIS project had two objectives: to gain credit for the author toward a Bachelor of Architecture degree, and to serve "as an educational aid in the building program of a local Presbyterian church." Success for the first is now a matter of record. For the second, there is strong likelihood that the project will be adopted substantially in its present form by the church building committee.

Structural frame will be all welded steel diagonal grid, supported by reinforced masonry columns and masonry bearing walls. Exterior finish will be buff-colored facing brick; gray unfinished concrete; exposed copper; gray asphalt paint on roof surfaces; and gray smooth-finish concrete paving surfaces, divided in modular squares. All major glass areas in the sanctuary and chapels will be clear-pane.

Shape of the sanctuary "offers the most economical spans for the given needed volume, and contributes to the desired illusion of height. Verticality is further accentuated by the fins and the slightly arched ceiling surface. The fins also exclude direct sunlight, and assist in directing the focus of attention toward the altar." The campanile, situated at the center of the group, is "the only symbolic marker."



Student chapel is for worship training and services of the younger members. Chapel at center of the plan, for adult worship and meditation, is really "the psychological center of the group," which accounts for the placement of the campanile. Not shown in the plan are balconies over the main sanctuary and central chapel, and second-floor classrooms for high-school, college and adult groups in the educational wing. All classrooms have movable partitions. Service pantry between fellowship hall and lounge is connected by dumb-waiter with kitchens below





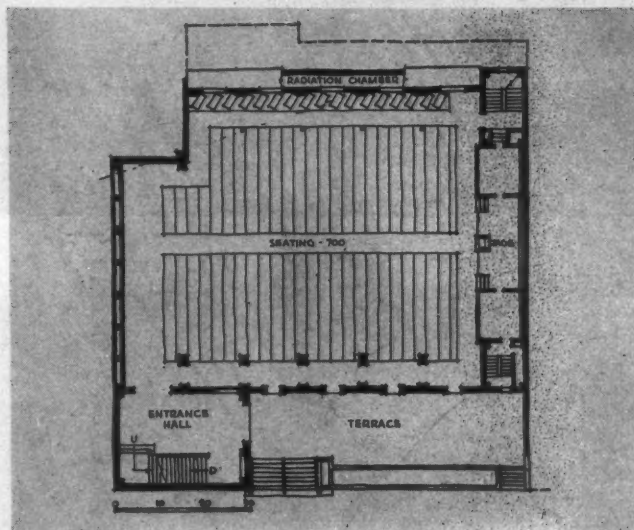
COMMUNITY CHURCH NEW YORK CITY

Magoon and Salo, Architects

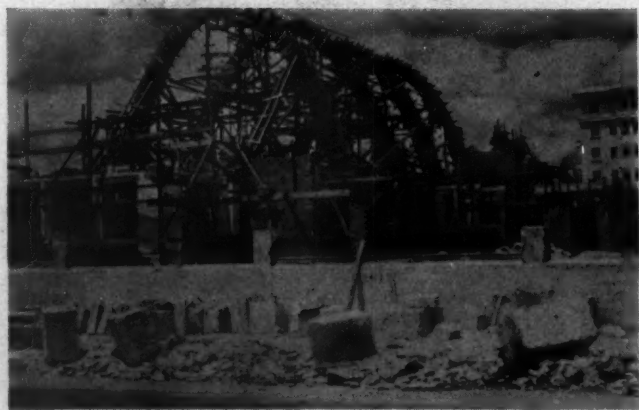
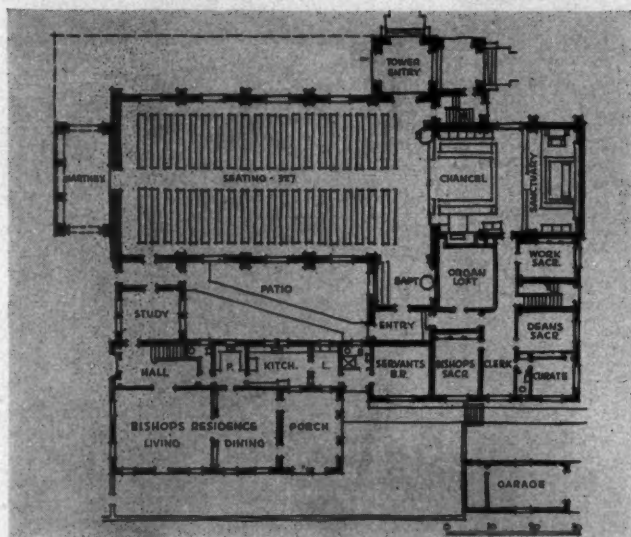
THIS was an unusual problem," say the architects, "for an unusual congregation. It is a liberal church with a membership including all creeds, races and colors. This freed us considerably from traditional stipulations."

Required seating for 1,000 and limitations of the plot necessitated the large balcony, developed to interfere as little as possible with primary requisites of light and spaciousness in the worship area as a whole. Simplicity is achieved through use of the same face brick on the interior as on the outside, with focus brought to the sanctuary and altar by broad surfaces of marble. The chancel is flanked by two organs, behind louvers of red slate with bronze trim. Woodwork is bleached oak; ceiling, acoustical plaster.

"Lighting fixtures are more in accordance with present-day efficiency standards than with traditional appearances." Theater seats are combined with pew backs for comfort, and economy in spacing. Entire building, including social areas, is air conditioned.



Peter A. Joley—Photos



EPISCOPAL CATHEDRAL HAVANA, CUBA

Coffin and Coffin, Architects

FORTY years ago, Architects Cram, Goodhue and Ferguson designed the original Cathedral Church of the Holy Trinity, built on a site now distant from most of the congregation's living places. Need for centralizing the cathedral, school, and residences of the Bishop and Dean in one location gave further basis for a new structure.

"No traditional style was desired, but as the choir and sanctuary furnishings of the former cathedral are of fine design and workmanship, they have been salvaged and incorporated, according to their original plan, in the new building. This gives the congregation a transition or continuity from the past to the present."

Concrete arches have been used in the nave both to eliminate columns and to implement the clerestory, considered a most desirable feature for the Cuban climate. Construction throughout is reinforced concrete skeleton, designed to withstand winds up to 130 m.p.h., with brick filler walls and partitions. Ceilings of nave and chancel are acoustical tile; lighting is indirect fluorescent.

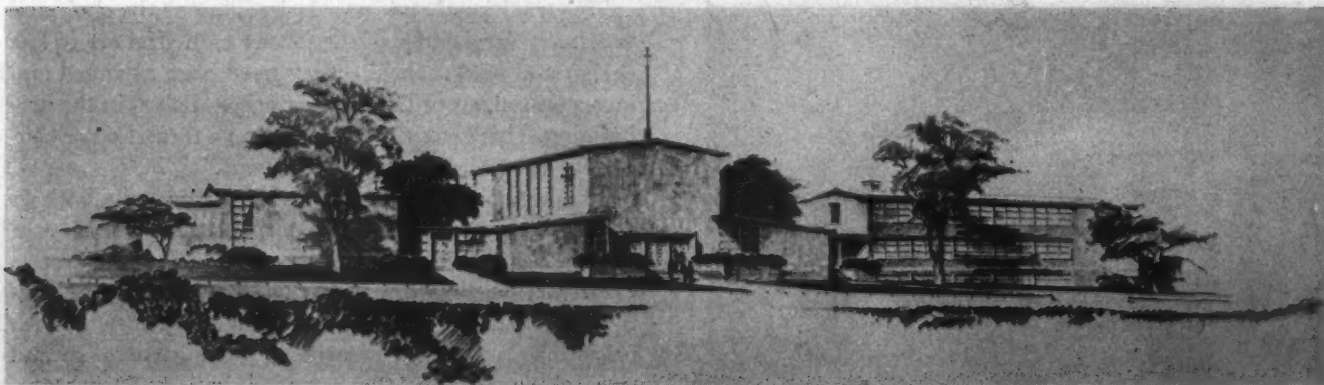
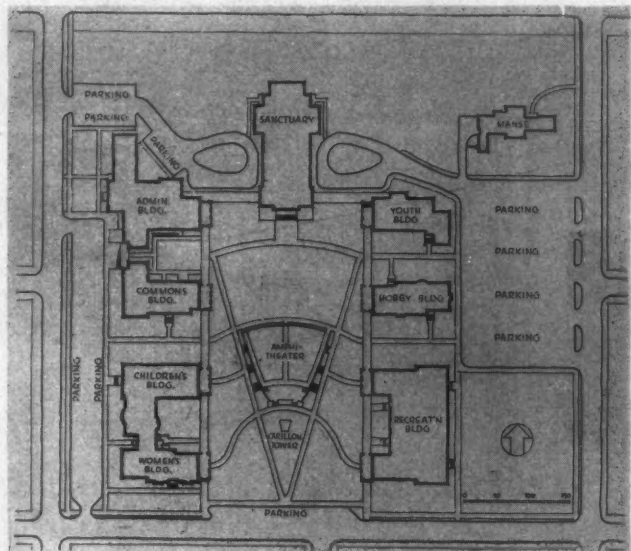


Photo Associates Photo

UNIT PLAN, DALLAS, TEXAS

Tatum, Alexander and Quade, Architects

GROWTH toward final objectives of the Preston Road Christian Church will be by unit stages. First units will be those shown in plan as Administration and Commons buildings, their original designations. The model (photo above) shows them in such character, at a time when "the most vocal committee element wanted something colonial." Latest phases (below) show the Commons Building revised, in the light of restudied needs, as an educational unit, and since the Administration Building auditorium will be used at first for worship, this unit now has a more churchly appearance. The more contemporary character in general results from "reasons of economy and sincerity."



ARCHITECTURAL ENGINEERING

TECHNICAL NEWS AND RESEARCH

THE ACOUSTICS OF CHURCHES

By Clifford M. Swan, Acoustical Engineer

IF good hearing is to be achieved in an auditorium, care and forethought must be given to the subject from the very outset of the planning. Three major items require the consideration of the architect: (1) the effect of the design, including shape and size; (2) the sound-absorptive qualities of the materials to be used as an interior finish; and (3) the possible need for electro-acoustical amplification. Each of these must receive critical study to provide suitable solutions to any acoustical problems without interference with esthetic or practical considerations.

Design

The greater the size of the auditorium, the more urgent is the problem. In any large enclosed space, it is usually difficult for the speaking voice to be heard without strain, both on account of the long distances to which the sound must carry and because of the confusion created by the reverberation, a factor which is directly proportional to the volume of the room and to the loudness of the originating sound. Height increases the volume of the room and hence the reverberation, and causes direct reflections from the ceiling to be damaging rather than helpful.

Another factor in the design which should be watched is the curvature of walls or ceilings. Concave curved surfaces like domes or arches act as mirrors to focus the sound in certain definite regions and thus produce echoes or sound images. Curved walls will do the same. The radius of curvature of ceiling surfaces should always be either considerably less than the height or greater than twice the height. Any radius between these limits is likely to cause trouble. Curiously enough, the wrong curvatures are generally the ones which most appeal to the architectural eye.

Due to reverberation and to reflection from surfaces distant from the ear, some portions of an auditorium are especially poor for hearing. These are commonly but erroneously called "dead spots." In a cruciform church this region is usually near the center aisle just back of the crossing. In a rectangular auditorium it

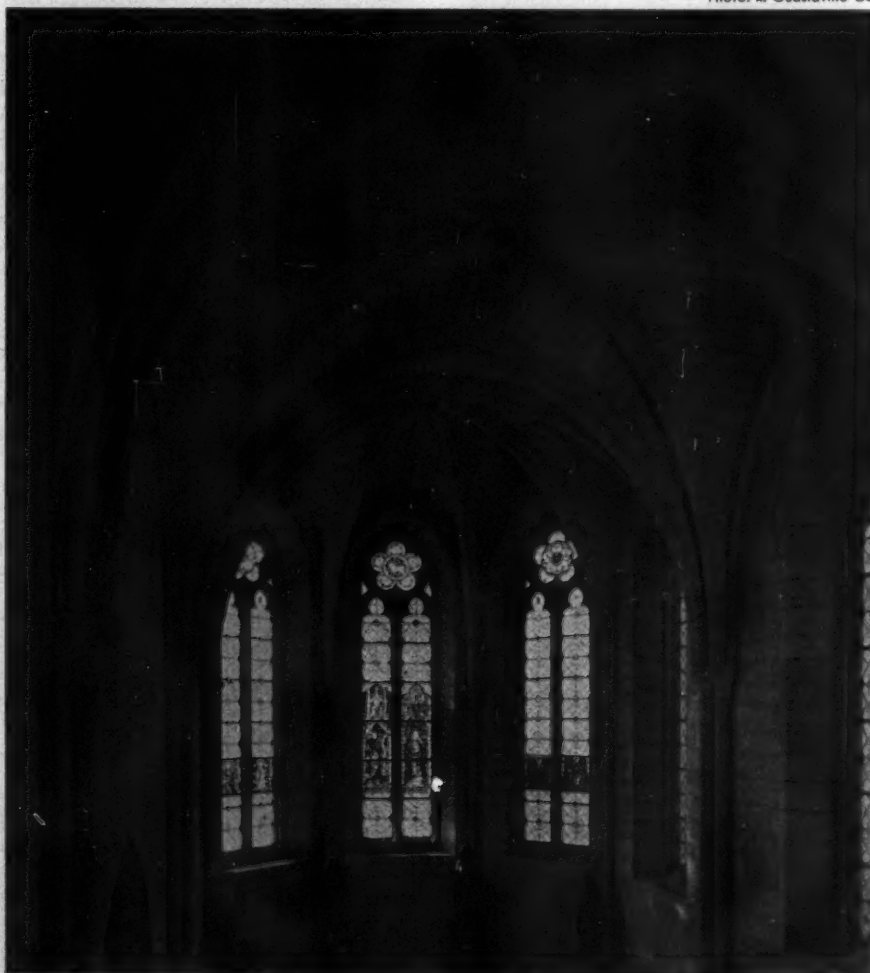
is about two-thirds of the way back.

For all of these reasons, large churches require special care in eliminating or correcting possible sources of trouble. Small churches are more easily dealt with, but even these have their problems. In any case, these factors must be studied and provision made for acoustical correction while the building is still in the planning stage when the change of a pencil line can obviate expensive or difficult structural changes later.

In connection with the design, a word

should be said about the best location for sources of sound. When no electrical amplification is used, the best place for speaking is from the altar, while the worst place is on the axis of the church at a distance from a wall, as, for instance, from the chancel steps. Pulpit and reading desk should be placed at the side against a wall or column. Sounding boards are of little value, but if used they should never be curved but always horizontal plane surfaces of considerable area hung low over the location most

Photo: R. Guastavino Co.



Structural acoustical tile is incorporated in building fabric; joints pointed with mortar. Gothic Chapel at Cloisters Museum, New York; Allen and Collens, Architects

commonly used by the minister.

Although it is not the custom in many denominational churches, the best and most logical place acoustically for the choir and organ is in the rear gallery. The resonance needed for the music can be provided better here without interference with the spoken word, and the distribution throughout the church is improved.

As a rule, a wide auditorium is difficult for speaking. The congregation needs to be in front of the preacher where it can see his face and watch his lips. Persons seated far on one side hear well only when the speaker's head is turned toward them, in which case those on the opposite side are correspondingly hampered by being thrown into a sound shadow. Electro-acoustical distribution then becomes the only possible cure.

Reverberation

Excessive reverberation is an ever present menace to comfortable hearing, but it is readily cured by absorption of the unwanted sound reflections by suitable materials in proper amount and location. The larger and higher the auditorium, the greater will be the reverberation and the worse the confusion caused by it. Furthermore, the amount of reverberation increases with the loudness of the initial sound, so that attempted cures by public address systems simply make matters worse by making the initial sound louder and the reverberation more pronounced. It would seem as if there were a dilemma here, since reduction of reverberation lessens the carrying power of the voice while amplification in any marked degree restores the reverberation. The answer lies, not in using "loudspeakers" to restore the sound level after absorp-



To reduce reverberation, wall ashlar is surfaced with structural acoustical tile, and vaulted ceiling with acoustical plaster in St. Joseph's New Cathedral, Buffalo; Eggers and Higgins, Architects. Here, acoustical plaster is a weight-saving factor

tion, but in a limited amplification so designed as to reinforce the sound only in those regions where it is necessary, and then only to a degree which will make it comfortably heard. Before discussing this, however, let us first consider the various sound-absorbing materials.

Sound Absorbents

The usual fireproof building materials used in the construction of a church have little absorption for sound. Even wood sheathing has an average absorption of not over six per cent. On the other hand, carpets, rugs, hangings, cushions and the clothing of the congregation are highly absorptive, especially of the higher frequencies. If present in sufficient quantity and in the right places, these materials may correct conditions in a small church, but almost never in a large one. Additional absorption must therefore be introduced, par-

ticularly on surfaces in the upper part of the auditorium where reflected sound is most harmful, or indeed on any surface where reflections are not wanted. The amount and exact location of the corrective materials is partly a matter of calculation and, even more, of experience.

Materials used for this purpose may be grouped under four heads — acoustical plasters, sprayed fiber, felts, and tiles. (For noise-reduction coefficients of the various types of acoustical materials, see Time-Saver Standards, ARCHITECTURAL RECORD, March, 1944.)

Acoustical plaster installations require careful supervision to make sure that their efficiency is not impaired by carelessness or inexperience. While plasters have lower absorption coefficients than other types of acoustical materials, there are cases where surface curvature or low cost and weight make them desirable. Sprayed asbestos or rock wool

(Left) Perforated acoustical tile being applied with adhesive to plaster face of vaulted ceiling. (Center) Another treatment of warped surfaces is with rockwool tile resembling travertine. (Right) Sound-absorbing asbestos fiber can be sprayed on prepared surfaces



Photos: Celotex Corp.; U. S. Gypsum Co., and Keasbey and Mattison Co.

Photo: National Gypsum Co.



Photo: U. S. Gypsum Co.



Acoustical board of wood fiber applied between rafters and purlins; Grace Lutheran Church, Fremont, Ohio; Cram and Ferguson, Architects. (Right) Vaults and wall spandrels faced with acoustical tile in Church of the Holy Child, Phila.; George I. Lovatt, Architect

fiber has the same advantages and a very high efficiency, and offers a solution for domes and warped surfaces already built.

In the early days of acoustical correction, hair felt was the almost universal means of absorption. Today, felts are more usually made of rock wool or glass wool. While felt is now applied less frequently in churches, there are still cases where it can be used to advantage. It is useful for covering the ceiling panels between the purlins of a wood ceiling, but instead of its being covered with cloth or burlap as in former days, it is now concealed by perforated asbestos board which permits the free passage of sound through the holes and which can be painted as desired.

Particularly suited to ecclesiastical architecture is acoustical tile, prefabricated to a fixed and definite absorption characteristic. Tiles may be classified under two heads, those which are non-structural and are glued to the treated surface, and those which are structural masonry materials incorporated in the fabric of the building. The latter is used as a facing course either for wall ashlar or for vaulted ceilings and is strictly fireproof. At the time of the great fire which destroyed the interior of the Riverside Church in New York during construction, the acoustical tile was the only material undamaged by the heat. This material has been and is being extensively used in the building of stone churches, from large cathedrals to small parish churches. Among these may be noted the Cathedral of St. John the Divine, Riverside Church, and Christ Methodist Church, in New York; Grace Cathedral, San Francisco; East Liberty Presbyterian Church, Pittsburgh; Girard Chapel, Philadelphia.

The illustrations show two interiors where this material was used. In the Gothic Chapel of The Cloisters Museum, New York, all of the vaults and ribs and the wall ashlar are surfaced with it. In the great nave of St. Joseph's New Cathedral, Buffalo, it is used for wall ashlar, while the groined surfaces of the ceilings are finished in acoustical plaster, the latter material being used in this instance because it is lighter than masonry construction. Normally, the masonry tile would be used for the vaults as well as the walls, as in the case of the Riverside Church and other churches.

The painting of acoustical materials, when necessary, is a matter to be undertaken only with the greatest caution. Since such materials depend for their absorptive value on the porosity, any form of paint which films over the pores will seriously reduce the efficiency, especially in the higher frequencies. Spraying with a thin paint is to be preferred, but where this is not possible the manufacturers of the acoustical material should be consulted. Some materials lend themselves more freely to decoration than others. Plaster is the most difficult of all.

Amplification

In large churches where it is difficult for the unaided voice to reach all parts of the auditorium, or where the audience is so scattered as not to be entirely in front of the preacher, it is desirable to use a moderate amount of electro-acoustical reinforcement, just enough to build up the intensity in those regions where it is needed for comfortable and distinct hearing. The ordinary public address system is seldom suited to this purpose. Such systems are well enough for covering large out-of-doors areas where loud-

ness is the desideratum while quality of tone and high-fidelity are unimportant. They are not usually adapted to the niceties of the artistic solution whereby the sound is reinforced only in specified areas in an auditorium, and then only to such a degree as to produce easy understanding of the spoken word without conscious awareness of the artificial aid. In order to accomplish this result, not only must amplifiers be constructed so as to give a faithful reproduction of the voice, but the sound-projectors themselves must be designed for the same purpose and should be so placed and oriented as to distribute the reinforced sound only to those regions where it is needed.

In the correctly designed system, only one sound-projector, or assembled group of such projectors, should be used for any one given source, and should be placed as near that source as possible in order to preserve the illusion of there being but one point of origin. In the case of a pulpit, the projector can be mounted directly above the preacher's head, on top of a canopy or tester hung over the pulpit. The projector is readily concealed from view by open-work tracery surrounding it. When the choir must be included in the amplification, or where there are transepts or a very wide auditorium, supplementary projectors should be added to the first, at the same point, and oriented so as to accomplish the desired distribution.

In all cases of directing the sound from a projector, it should be remembered that persons seated near the source do not need the help of amplification. Only those at some distance need it, and the projector should be set at the proper angle to cover the remote seats and not those in front.

In some churches, microphones are desired on the altar or reading desk or in the choir, and sometimes even for the organ. All of these cases will require study as to design, position and orientation of the appropriate sound-projectors. The amplifier and panel-board for the whole system can be placed in a nearby room or unoccupied space. It is well to have a stop on the volume control so that inexperienced or careless attendants cannot operate the system at a level louder than it was designed for.

An amplifying system like the one just described should be designed to fit each individual case. Specially constructed systems of this sort have been installed in the Riverside Church and Trinity Church in New York City, East Liberty Presbyterian Church, Pittsburgh, Church of St. Andrew and St. Paul, Montreal, Worcester War Memorial Auditorium and other places. The somewhat greater expense of such an installation is amply justified by the perfection of the results.

SUBTLE SOUND-REINFORCEMENT

Data from R. N. Marshall and C. W. Reynolds, *Western Electric engineers*; and C. C. Randolph, *Western Electric Shops*

UNTIL a sound-reinforcement system was designed for Centenary Methodist Church, Winston-Salem, N. C., one-third of the worshipers could not hear properly. Preliminary investigation showed that power amplification was not the answer: the average speaker could be heard, but not understood. The problem was one of reverberation, accentuated by the location of the pulpit in the center between the two transepts, at almost the precise focal point of the domed choir section.

In addition, low-frequency sounds were little absorbed while high frequencies were dissipated, due to the acoustical wall treatment which had been applied somewhat too thinly for uniform frequency absorption. Vowel sounds echoed around the church while the intelligible consonant sounds were rapidly removed from circulation.

Acoustical correction meant creating an unobtrusive system that would (1)

increase the ratio of direct to reverberant sound reaching the listener while (2) restoring the balance between vowels and consonants.

Step (1) was effected by locating a number of sources overhead so that a plane wave of sound would be propagated directly over the listener's head before reflection could take place. From overhead, phase differences are very small so that a person has difficulty in locating the true source.

Step (2) was to use a special microphone that accentuated consonant sounds, thus restoring the balance needed for good articulation.

From a strictly sound-engineering viewpoint, best results were obtained with 10 speakers rigged 15 ft. overhead and 15 ft. apart in two rows over the two main rows of pews. However, this solution was architecturally embarrassing.

Instead, it was decided to mount six

speakers 30 ft. overhead on the inside of each of the six massive pillars, concealed in specially designed housings which repeat the vertical lines of the clustered columns.

The box was made from a wood frame and plywood ends. Sides are three pieces of formed aluminum sheet, welded at the inverse seams and screwed to the frame. The speaker baffle is above the bottom grille and set at a 15° angle.

Finish simulates the neighboring stone; a flat base grey, followed by a brownish shading stain to match natural aging of the stone; and mortar lines simulated by a light grey stripe of paint. The sound aperture is covered by grey rayon cloth.

The careful listener will occasionally notice that the sound is coming from a source other than the minister. Yet, the general aural illusion is good and helped by lighting the lectern so as to attract the eye to the minister.

Centenary Methodist Church, Winston-Salem. Speakers are concealed in housings that repeat the vertical lines of the clustered columns



Ray W. Goodrich Photos

AND NOW—THE PANEL-HEATED APARTMENT

Leonard Schultze and Associates, Architects; Slocum and Fuller, consulting mechanical engineers for radiant heating; Richard Crittall Radiant Heating, Inc., technical advisors; J. L. Murphy, Inc., heating contractors

Two of this country's first panel-heated apartment houses are nearing completion on New York's upper Madison Avenue. Both buildings feature apartments of the luxury type — to be sold as "cooperatives" — and require a high standard of occupant comfort.

The owners point to the advantages of panel-heating: (1) even heat over large areas; (2) comfort at lower temperatures due to the radiant effect and resulting lower humidity; and (3) cleanliness due to the relative absence of convection currents. At the same time, such a system calls for sensitive controls and flexibility of operation when used to heat living quarters, particularly in an apartment house with its diversity of exposures and varying occupant requirements.

Presented here are details of the panel system in one of the buildings, at 15 East 91st St. The other, at 47 East 87th St., resembles it in size, character, and heating arrangement.

All apartments are heated by low-temperature ceiling radiation from pipe coils in two systems of panels, one for normal heating and the other for auxiliary heating. The temperature of water in either circuit can be varied independently. A careful system of temperature controls is provided for the automatic zoning of the building, and controls are located in each room for operation by the tenant. Controls are automatic in all master rooms; manually operated in others.

According to John Pryke of Slocum and Fuller, consulting engineers on the project, ceilings are chosen as the radiating surface because they provide a more even heating effect throughout the entire room, unobstructed by floor coverings and furniture. Floor-to-ceiling temperature differential is expected to be about 2° F.

The ceiling surfaces are heated by hot water circulating in pipe coils embedded within one inch of the underside of the 5-in. floor slab or in hung ceilings, as determined by the architectural treatment of the room. Certain exposed rooms on the upper floors are also provided with wall coils located beneath windows to offset excessive heat loss. Interior bathrooms have special treatment, in that radiation emanates from pipes just

below the tile floor, to give a warm surface under foot.

The pipe coils are fed with water at temperatures varying from 80° to about 110°, by vertical risers that run up the building columns. These riser mains are actually embedded in the brick column casings so that exposed pipe work is kept to a minimum. The riser mains in turn are fed by horizontal mains in the basement which run from the boiler rooms, and are keyed to each system.

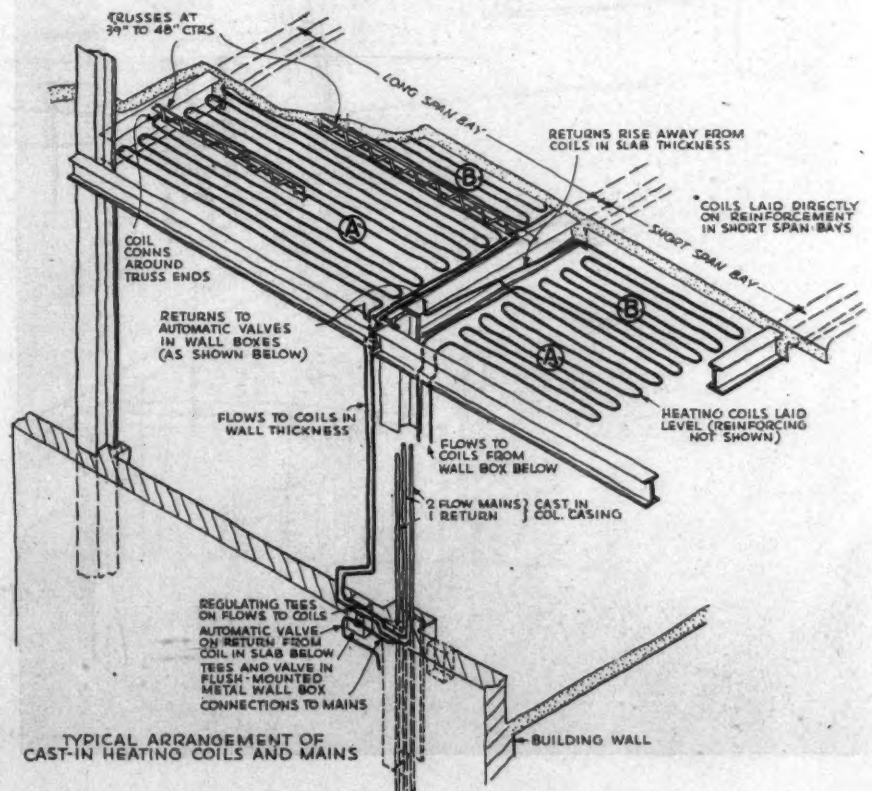
Auxiliary Panels

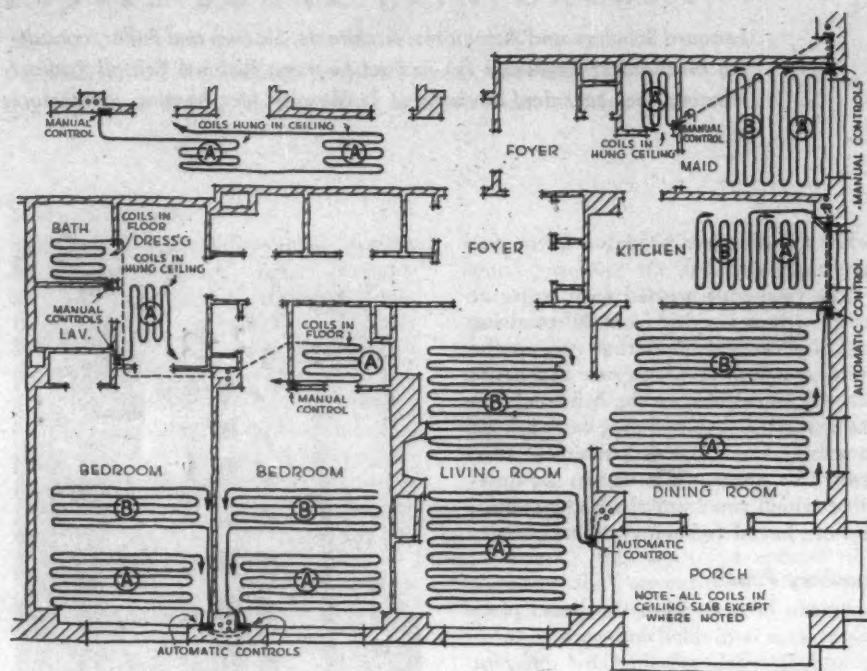
As can be seen from the panel plan, the system is divided into two circuits, A and B, each supplied by different risers. The panels in Circuit A follow roughly the periphery of the building and are concentrated near windows to offset "cold radiation," an important factor in this building with its large window areas. These panels operate

William B. McClurg Photo



(Right, Above) Panel-heated apartment house in New York; owners, 15 East 91st Street Corp., a subsidiary of City Investing Co. (Below) Detail of ceiling pipe coils. Pipe is placed within 1 in. of bottom of cast slab. Riser mains are embedded in brick column casings. "B" panels operate only when temperature falls below 35°





(Above) Typical apartment plan showing arrangement of pipe coils for low-temperature ceiling radiation. Panels are divided into two systems: "A" panels for normal heating, and "B" panels for supplementary heating. (Below) Positioning shop-welded pipe coils within slab form. Connections are field welded; screwed joints occur only at the valves



continuously when outside temperatures fall below 65°.

Circuit B is comprised of coils in interior panels, which serve as an auxiliary system that functions only when outside temperature falls below 35°. The occasional wall coils also operate on the B Circuit.

Controls

Each master room whether living room, dining room, or bedroom, has its own thermostat, and minor rooms have hand valves so that tenants may regulate room heat independently of the main controls.

Automatic control valves are enclosed behind furred column casings with access doors; the manual control valves are fixed in recessed metal wall boxes.

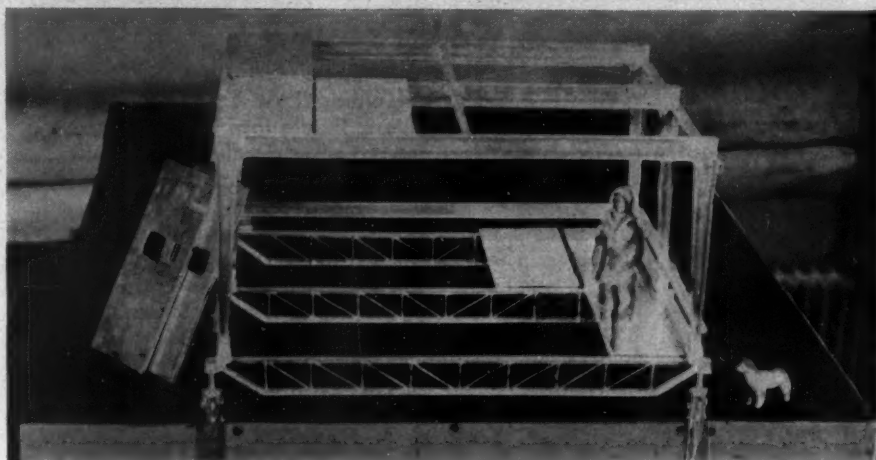
In addition, Minneapolis-Honeywell temperature controls are provided for various zones of the building. Because the panel system utilizes large heating surfaces, water temperature in the coils ordinarily will not much exceed that of blood heat: In Circuit A, it is 80° when outside temperature is 65°, and 110° when outside temperature is 35°; in Circuit B, the water is 80° when outside temperature is 35°, and 110° when outside temperature is 0°. Outdoor thermostats make adjustments for variations in solar heat, and wind velocity and direction. During the period of reduced heat requirements at night, a time-clock control reduces the temperature of the water approximately 10° below that of its normal daytime temperature.

Panel Installation

Installation of the risers kept pace with the erection of the steel work of the structural frame. As the steel columns were being erected, the riser mains were clipped directly to them, care being taken that the required space for fireproofing was preserved between the pipes and the steel work. As soon as the forms for the floor slabs were in place, the shop-welded coils of pipe were laid in place and welded together. The only screwed joints occur at the valves. As soon as the coils were connected, they were tested to 300 lb. per sq. in. hydraulic pressure, and the few leaks in the welds repaired.

At this stage of erection, the branches for future hung ceiling coils were also welded to the riser mains. After the floor slabs were cast and forms had been stripped and main carrier channels for the hung ceilings were in position, the hung ceiling coils were erected, connected, and tested. These hung ceilings actually form a part of the structure of the hung ceiling, the pipe work replacing the small furring channels normally used. The control valve wall boxes are built in as the partitions are erected.

PRODUCTS for Better Building



Basic building units of lightweight demountable shelter developed by U. S. Army

TROOP SHELTER

The U. S. Corps of Engineers is designing a prefabricated troop shelter for the Arctic that offers lessons in simplified construction. Requirements are exacting. All building units must be light enough for transport by plane or glider, and capable of quick erection by unskilled workmen. The units must be adaptable to buildings of different sizes and shapes that can be dismantled and reassembled. The finished buildings must be capable of being heated to 70° F. at an outside temperature of 70° below zero, and buck a 125 m.p.h. gale.

Present plans call for a modular bay measuring 20 ft. by 8 ft. by 9 ft. high, which can be joined to others in any horizontal direction. Basic structural element is a rigid-frame assembly. The floor beam used is an open-web aluminum joist resting on a jack at each end. Supported on insulated footings, the jacks eliminate the need for precise workmanship in the field since they can adjust the level of the floor beams for any terrain.

Other structural elements are the two columns and roof beam which form a bent. Gusset plates are shop-fastened to the columns. In the field, the roof beam will be fastened to the gussets with through bolts.

The interchangeable panels for walls, floors, and roof are of sandwich-type construction with an aluminum facing and insulating core. Those for the floor will be shop-finished with bonded wood surface, 1/8 in. thick; and those for walls and ceiling painted on one side to mask the metallic appearance and introduce some color into the shelter.

FIRESAFE STAIRWAYS

In existing buildings it is sometimes a difficult feat to enclose stairways and wellways as a fire-protective measure; and even in new ones, particularly department stores, the enclosing of moving stairways presents an unusual problem if they are not to be blocked off from

the free passage of normal traffic.

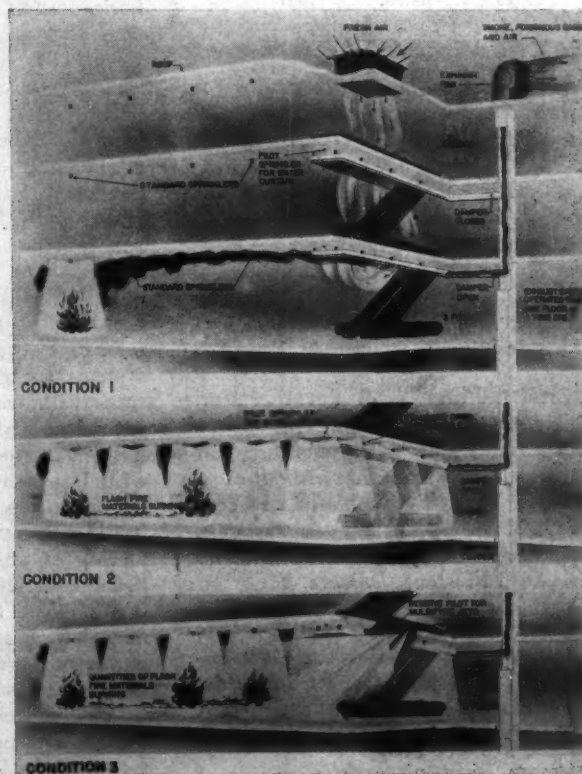
Also, some students of fire safety believe that only too often enclosed shafts quickly fill with smoke and superheated gases when doors are opened to admit persons trapped in burning areas.

A means of sealing off open wellways from the spread of fire through use of a combined water spray and ventilating system has been devised by engineers of the Grinnell Fire-Fighting Laboratories, Westinghouse Electric Corporation, and Otis Elevator Company. Guiding principle is "to direct and control the natural forces generated by fire, rather than attempt to oppose them."

In such a system (applicable only to a sprinklered building) outlets for a water spray would be installed completely around the ceiling opening of the wellway. This water curtain would act as a shield against smoke and flames, through which persons could duck to safety. To neutralize the pressure of hot gases which might send the smoke and fumes in gusts through the water spray, air intake slots would be installed completely around the opening inside the water outlets and connected with insulated ducts leading to an exhaust fan in the roof. The water spray would prevent flames from entering the ducts. In addition, an air intake at the top of the wellway would open automatically to provide a downdraft of fresh air to replace hot gases sucked out of the fire area.

If the blaze were of sudden intensity,
(Continued on page 142)

How water-curtain and ventilator system act as fire check in sprinklered building



Condition 1: In a small fire, vents around wellway remove smoke and fumes through roof exhaust; fresh air enters at opening above shaft

Condition 2: If fire spreads, water spray around wellway protects opening without blocking escape

Condition 3: In extra-hazardous areas, flash fire will activate high-velocity jet spray directed down stairway from above

MANUFACTURERS' LITERATURE

BUILDING MATERIALS

Johns-Manville Building Materials. A group of descriptive folders bound together: (1) Built-up Roofs; (2) Sound Control; (3) Transite Movable Asbestos Walls; (4) Ideas for Decorative Floors; and (5) Unit Construction—Walls, Ceilings, Floors. Each gives design and installation information, description of products, specifications, features. 20, 16, 24, 16, and 16 pp., resp., illus. Johns-Manville, 22 E. 40th St., New York 16, N. Y.*

COATINGS

Prufcoat Protective Coatings. New pamphlet describing a metal and masonry paint available in a variety of standard colors. Lists uses such as on concrete floors, structural steel, masonry walls, ventilating systems; gives specifications; and includes full directions for application. 4 pp., illus. Prufcoat Laboratories, Inc., 63 Main St., Cambridge 42, Mass.*

ELECTRONICS

The Electronic Way. A non-technical explanation of electronics in terms of a hairpin, a window screen and a tin can. How the electronic principle has been applied in home heating controls, industrial controls, aircraft, etc. 8 pp., illus. Minneapolis-Honeywell Regulator Co., Minneapolis 8, Minn.*

HEATING, VENTILATING

(1) **American Exbrook Boiler for Improved Automatic Heating;** (2) **American Arcoliner Wet Base Oil Boiler.** Two circulars describing the latest additions to a heating equipment line: an oil fired unit for small homes (2), and an oil or stoker fired unit for large homes, apartments and commercial buildings (1). 4 pp. ea., illus. American Radiator & Standard Sanitary Corp., P.O. Box 1226, Pittsburgh 30, Penn.*

Crotty Water Wall Furnace and Boiler Amplifier. Full information on a wall furnace and boiler amplifier unit featuring easy installation without excavation, increased capacity in any conventional boiler, and low maintenance. 8 pp., illus. Crotty Mfg. Corp., 133-15 35th Ave., Flushing, L. I., N. Y.

Dravo Counterflo Oil or Gas Burning Direct Fired Heater (Bulletin 516). Bulletin on a new heater designed for industrial and commercial use; outlines in detail the application of

stainless steel to combustion chambers used in this unit; diagrams and describes features; gives complete specifications and a capacity and dimension table. 12 pp., illus. Dravo Corp., 300 Penn Ave., Pittsburgh 22, Penn.*

40 Facts About Modern Radiant Heating. Non-technical discussion of radiant heating, intended chiefly for consumer use. Includes description of how radiant heating works, how it compares in cost with other systems, and what the advantages are. Also includes two pages of information on the Smith line of boilers. 12 pp., illus. The H. B. Smith Co., Inc., Westfield, Mass.*

The National Fitters Guide and Heat Loss Calculation Sheet. A simple method of figuring radiation and selecting proper boiler size, based on the method of calculating building heat losses, determining the radiation and selecting the boiler that is recommended by the Institute of Boiler and Radiator Manufacturers. The National Radiator Co., 221 Central Ave., Johnstown, Penn.*

New American Blower Aeropel Home Ventilator. Full description of a built-in wall ventilator for use in the kitchen; has a white plastic grille which may be installed either vertically or horizontally. Installation diagrams included. 4 pp., illus. American Blower Corp., Detroit 32, Mich.*

Rayduct: the Pipe for Radiant Heating. The considerable amount of general information on radiant heating contained in this manual was especially prepared by Raymond Viner Hall, A.I.A. It includes basic information on what radiant heating is and a detailed discussion of the principal features in the design of a radiant heating installation. Pipe requirements and pipe layout systems are given for one-story structures with concrete floor slab on the ground and with wood-joint floors, and for a two-story wood-frame structure with basement. A chapter on general considerations in planning a radiant heating system covers selection and placing of pipe, grading and venting, boiler equipment, installation and fuel costs, effect on structure and finish materials, heat loss and lag, etc. Diagrams and installation plans are supplemented by photos of actual installations. Complete specifications for Rayduct also included. 44 pp., illus. Bethlehem Steel Co., Inc., Bethlehem, Penn.*

Tri-Flex Grilles and Registers. Catalog of a line of 26 standardized sizes of grilles and registers. Description, specifications, sizes and list price of each unit in the line; engineering data; recommended delivery velocities; charts to simplify accurate selection of proper grilles. 20 pp., illus. Tuttle & Bailey, Inc., New Britain, Conn.

INSULATION

Holding Low Temperatures with Better Insulation. Booklet covering how to select insulation and what to look out for; data on forms, properties and application methods; chapter on the principles and significance of vapor-proofing for various types of wall, floor and ceiling construction; graphs on representative thermal conductivities of various mineral wool forms; chart for computation of minimum insulation thicknesses to prevent condensation on cold surfaces in various environments; recommended procedures for vapor-sealing of masonry, wood, block and plastered walls. 24 pp., illus. Industrial Mineral Wool Institute, 441 Lexington Ave., New York 17, N. Y.

LAUNDRIES

Data for Architects and Builders: Laundromat-equipped Planned Laundries for Apartment Houses. Data useful in the planning of laundry centers in new and existing apartment houses and other types of multiple dwellings. Contains tables showing space requirements and hot water, electric and gas loads. 8 pp., illus. Laundry Equipment Dept., Westinghouse Electric Appliance Division, 246 E. 4th St., Mansfield, Ohio.*

LIGHTING

(1) **Germicidal Radiation by Silv-A-King (Bulletin 147-G);** (2) **A New Commercial Unit by Silv-A-King (Bulletin 447 FV).** Announcements of two new units in the Silv-A-King line, each giving complete description, suggested applications, specifications and installation data. 4 pp. ea., illus. Bright Light Reflector Co., Bridgeport, Conn.

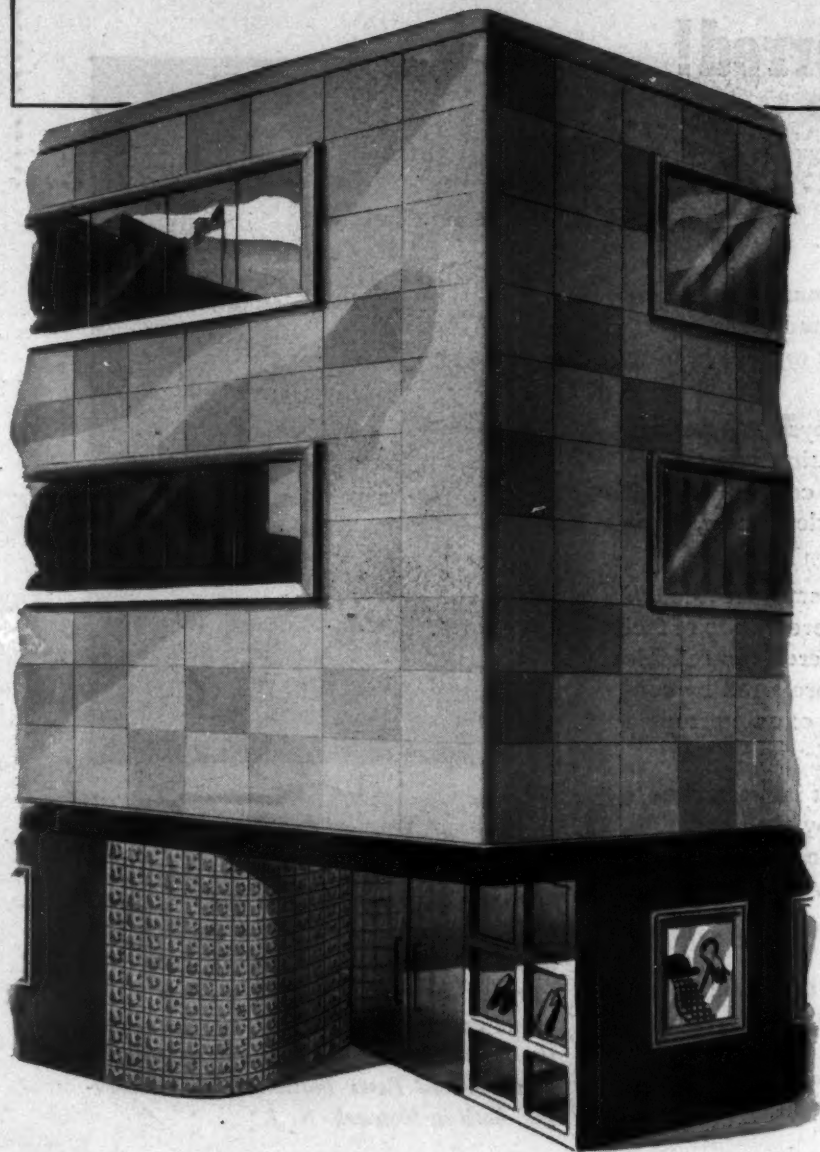
Now: New MO-4 Multi-Breaker for Smaller Homes. Folder describing and illustrating a new unit offering fuseless circuit breaker protection to smaller homes and providing a branch circuit load center for large installations. 4 pp., illus. Cutler-Hammer, Inc., 439 N. 12th St., Milwaukee 1, Wis.

Westinghouse Lighting Handbook. Revised edition of the Westinghouse pocket-size manual on lighting, considerably expanded and brought up to date. New features include a spectrum in full color, expanded information on distribu-

(Continued on page 154)

* Other product information in Sweet's File, 1947.

The Original Specification Was Right!



THE building was a thing of beauty inside and out. It was ideally suited for its purposes in every respect—except one.

That deficiency made the building a disappointment to owner and tenants. The rooms and corridors were reverberant. Working quarters were noisy.

When the owner complained, the architect pointed out that unfortunately his original specification for sound conditioning had been eliminated in a penny-wise effort to cut costs. The only remedy—sound conditioning as originally specified, but installed at added expense because the building is now finished and occupied. This time, the recommendation was not over-ruled.

Architects know that in most buildings sound conditioning is necessary for human comfort and efficiency. Even when every possible cost saving must be made, specifying sound conditioning is good practice—and good insurance of client satisfaction.

Acousti-Celotex* sound conditioning accounts for only a negligible part of the total cost of a structure.

When planning a building in which an atmosphere of quiet comfort is wanted, remember this—more sound conditioning has been done with Acousti-Celotex than with any other material. That is significant evidence of Acousti-Celotex excellence.

The Celotex Corporation line of acoustical materials is complete and up-to-date, as pictured and described in your Sweet's Architectural File. For the latest data on availability of any Acousti-Celotex materials in the quantities your specifications may require, consult the local Acousti-Celotex distributor. Or address your question to The Celotex Corporation, Dept. AR-476, Chicago 3, Illinois.

Sound Conditioning with
ACOUSTI-CELOTEX
** Perforated Fibre Tile* SINCE 1928

Sold by Acousti-Celotex Distributors Everywhere • In Canada: Dominion Sound Equipments, Ltd.
A PRODUCT OF THE CELOTEX CORPORATION, CHICAGO 3, ILLINOIS

For low operating costs, high heating efficiency

THIS ENGINEER RECOMMENDS OIL HEATING **—PETRO preferred!**

RUNNING big buildings is big business. With operating costs up, engineers, architects and management men today are depending on oil heat to hold heating costs down.

"In our experience," says Mr. Meyer, "American industries owe a great debt to oil heating systems, for they have produced low operating costs plus high heating efficiency, combined with cleanliness, flexibility and quick steaming."

Of course, Petro Oil Burning Systems provide *all* these advantages. Designed to utilize every drop of fuel oil economically . . . soundly engineered for reliable performance . . . Petro Systems are preferred by concerns like Mr. Meyer's to whom years of uninterrupted oil burner service is a "must."

To satisfy your client with oil heat at its best, choose Petro. Your selection is reinforced by the reputation, financial stability and engineering leadership of the world's oldest and largest exclusive maker of oil burning equipment — Petro.

INDUSTRIAL MODELS: No. 5 or No. 6 fuel oil; manual, semi-automatic or automatic operation; 8 sizes to 450 bhp. Thermal Viscosity preheating.

DOMESTIC MODELS: No. 3 or lighter oils; conversion and combination-unit types, 7 sizes. Patented "Tubular Atomization."

FULL DATA on Petro Industrial Burners are in catalog files of Sweet's and Domestic Engineering. Details on Petro Domestic Burners available in separate catalog. Copy of either sent gladly on request.



Henry C. Meyer, 3rd, is a member of Meyer, Strong & Jones, Inc., prominent New York firm of Consulting Mechanical and Electrical Engineers. Among the buildings in which this company has used Petro Oil Burning Systems are the New York Telephone Company Building in Brooklyn, and the American Insurance Building and the Newark and Essex National Bank Building, both in Newark, N. J.

PETRO

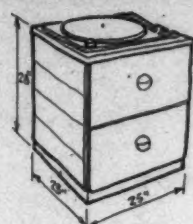
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PETROLEUM HEAT AND POWER CO. • Makers of Good Oil Burning Equipment Since 1903 • Stamford, Connecticut

CHURCH SOUND SYSTEMS

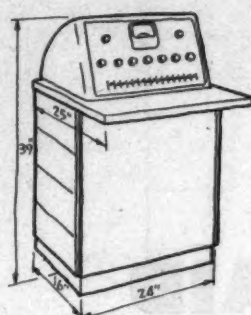
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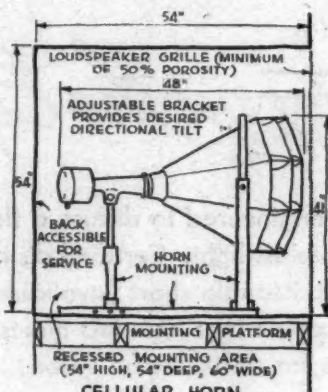
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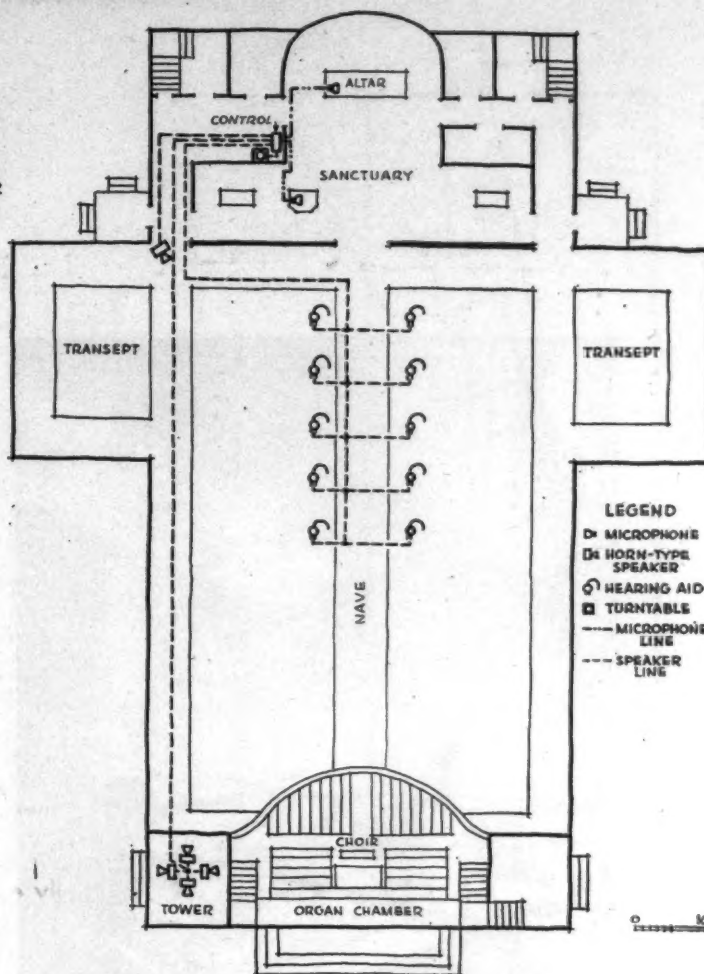
HORN TYPE SPEAKER



CONTROL



CELLULAR HORN



SINGLE CHANNEL SOUND SYSTEM FOR A CHURCH

SPEAKER MOUNTING DATA

Typical Types	Dimensions	Weight	How Mounted	Mounted To
Wall (flush mounted)	15" x 18" x 6"	10-15 lb.	In metal receptacle	Crossbar between joist or frame members
Wall (surface mounted)	14" x 16" x 10"	7-10 lb.	Wood screws at three points or three angle brackets	Stud or frame member
Horn (for inside installation)	25" to 60" long 12" to 24" diam.	20-30 lb.	1 1/4" pipe thread mounts with 6" floor flange	Stud, joist, or I-beam
Cellular horn	48" long 50" wide 41" high	130 lb.	Stands on or suspended from adjustable mounting bracket	Joist or platform
Belfry horn (for outside installation)	25" to 60" long 12" to 24" diam.	20-30 lb.	Minimum 1 1/4" mounting bracket with guy wires	I-beam or special towers

(Continued on page 125)



VIZ-AID

...Easy on the Eyes

... optically engineered to diffuse a flood of sunny, glareless light. Certified distribution curves and footcandle chart (available on request) prove that VIZ-AID meets all requirements for clear, restful vision:

- proper intensity ● even distribution ● freedom from glare

For maximum lighting efficiency specify the VIZ-AID. Designed for two 40- or two 100-watt lamps. U. S. Patent Nos. D-138990, D-143641 and 2411952. May we send you Bulletin 10-B-1 with complete details?

Day-Brite Lighting, Inc., 5465 Bulwer Avenue, St. Louis 7, Mo.
Nationally distributed through leading electrical supply houses.
In Canada: address all inquiries to Amalgamated Electric Corp., Ltd., Toronto 6, Ont.



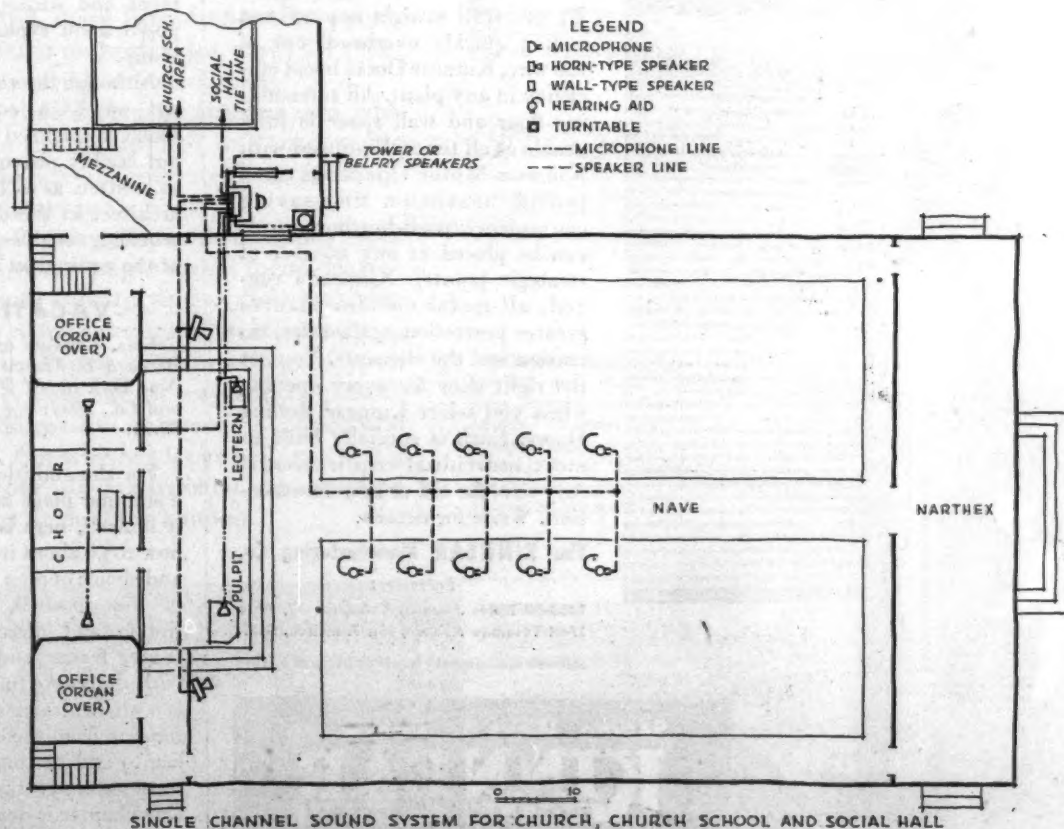
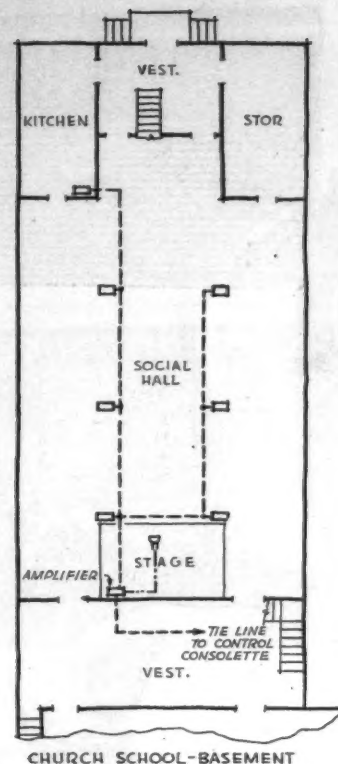
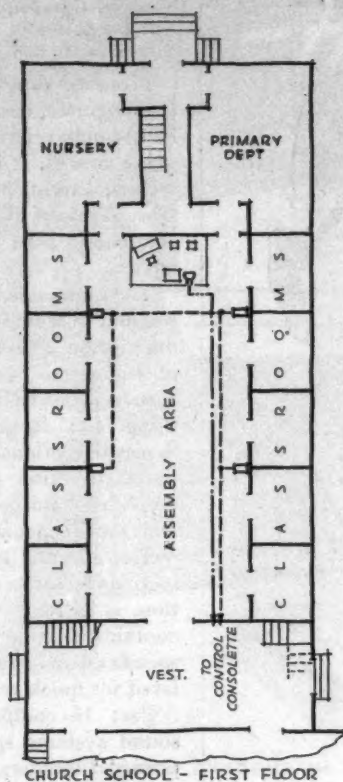
IT'S EASY TO SEE WHEN IT'S

DAY-BRITE

Lighting

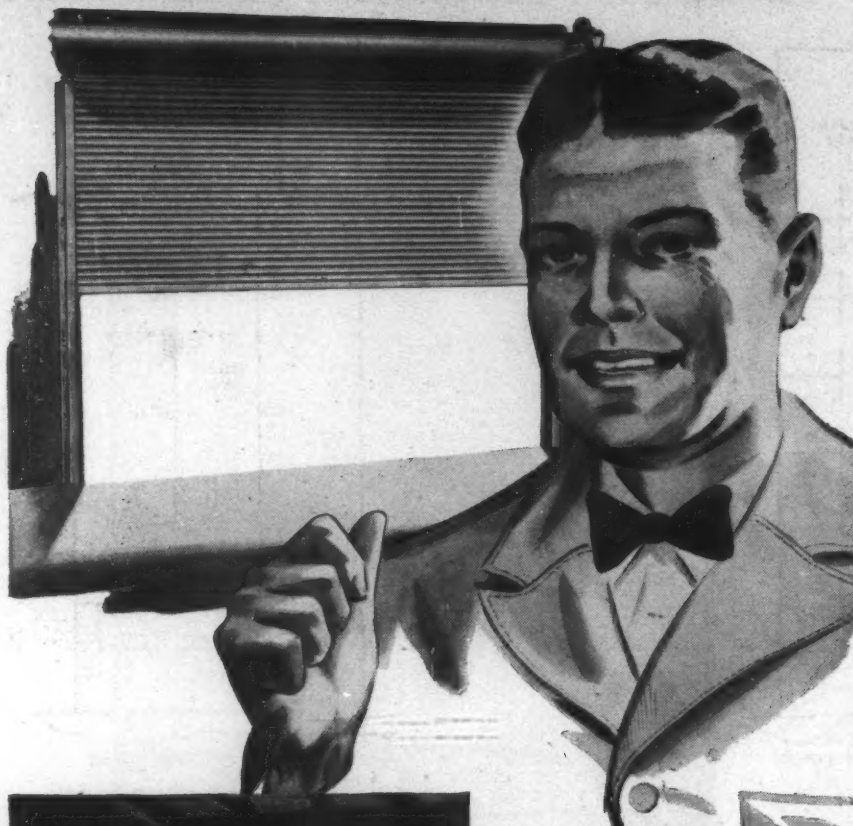
CHURCH SOUND SYSTEMS *(Continued from page 123)*

Details supplied by Richard de Haan, Radio Corporation of America



SINGLE CHANNEL SOUND SYSTEM FOR CHURCH, CHURCH SCHOOL AND SOCIAL HALL

"There's a lot more efficiency
around here since we installed those
KINNEAR ROLLING DOORS"



By opening straight upward and coiling quickly overhead, out of the way, Kinnear Doors boost efficiency in any plant. All surrounding floor and wall space is fully usable at all times. Equipped with Kinnear Motor Operators they provide maximum time-saving convenience (push-button controls can be placed at any number of strategic points). Kinnear's rugged, all-metal curtain assures greater protection against fire, intrusion and the elements. You get the right door for every opening when you select Kinnear Rolling Doors. Each is specially built to meet individual requirements. Any size, for old or new construction. Write for details.

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Offices and Agents in all Principal Cities

Saving Ways in Doorways
KINNEAR
ROLLING DOORS

REQUIRED READING

(Continued from page 30)

SOUND SYSTEMS

The Architects Manual of Engineered Sound Systems. Camden, N. J., Engineering Products Dept., Radio Corp. of America, 1947. 8½ by 11 in. 288 pp. illus. \$5.00.

Prepared especially for the architect and engineer, this volume is intended to be not only reference book, but working guide as well. It is written simply, with technical terms held to a minimum and two pages of definitions of the most commonly used terms offered at the outset.

The manual is divided into two parts, the first of which is devoted to a concise description of the principal components of engineered sound systems and the specifications that should be followed in using and installing the equipment. Separate sections deal with the various parts of the system — microphone, amplifier, loudspeaker, studios and control rooms, acoustics, sound film projector, antenna systems. Each of these sections follows a set outline of presentation, is illustrated with diagrams, and contains architectural and engineering specifications. Much of the data is tabulated for quick reference.

Part II comprises floor plans and sound systems specifications for seven principal building types — schools, hospitals, churches, auditoriums, stores, industrial buildings, hotels. Sound equipment and wiring layouts are superimposed upon typical floor plans in each group.

Although the volume is based throughout on RCA equipment, it contains much specialized technical information not readily obtainable elsewhere and is so written as to be of ready help to the architect in the design of any building requiring engineered sound, regardless of the equipment he is planning to use.

VACATION HOMES

Cabins, Cottages and Summer Homes. By Bernard S. Mason and Frederic H. Kock. New York 18 (67 W. 44th St.), A. S. Barnes and Co., 1947. 8½ by 11 in. 168 pp. illus. \$2.75.

For the ambitious layman who wants a summer place and would like to build it himself, here is the book to tell him how to go about it. From selection of site and choice of plan through to installation of the doorbell, the instructions are simple and direct. Included are log, stone, frame and adobe construction, with diagrams to illustrate each. There is a whole section of plans and elevations ranging from the open-front Adirondack leanto and the one-room hunter's cabin to two-story cottages of five or six rooms. One chapter is devoted to fireplaces and heating, another to outdoor grills.



Compare this with piece-by-piece methods so commonly used.

Less handling . . . less time . . . lower cost. Clean, dry construction. And these noncombustible panels provide smooth surfaces on both sides, ready for paint or other finishing material of your choice.

This principle of time saving by construction with large metal sections can be applied to floors, walls, ceilings, and roofs. In fact—to every step from the structural steel to the finished job.

Fenestra Building Panels are suitable for many types of buildings. Their great strength makes them ideal for permanent, lightweight construction . . . their easy handling also suggests many uses for movable structures or partitions. Fenestra Panels come in a range of types, weights and sizes to meet almost any building need.

You'll find full information in Sweet's Architectural File (Section 3C-1). But why not let us help you apply their benefits to your own particular construction problem? Just call us or mail the coupon.

TYPE C FOR WALLS. Composed of two metal members pressed together, with felt at each side to prevent metal-to-metal contact. Filled with insulation at the factory. Standardized in 3" depth and 16" width, in 18 gage painted steel or 16 B&S gage aluminum.



TYPE D FOR FLOORS. Box beam formed by welding together two steel sections. Side laps interlock to form continuous flat surface. Cover plates available for open cells to provide two flat surfaces. Standardized in 16" width. Depths 1 1/4" to 9". Gages 18 to 12.



HOLORIB ROOF DECK. Copper-bearing steel sheets reinforced by three integral triangular ribs on 6" centers. Provides flat surface for mopped application of insulation and roofing. Sheets 18" wide, in lengths as required for purlin spacing. Gages 18 and 20 are standard.



DETROIT STEEL PRODUCTS COMPANY,
Building Panels Division,
Dept. AR-9, 2252 E. Grand Boulevard,
Detroit 11, Michigan

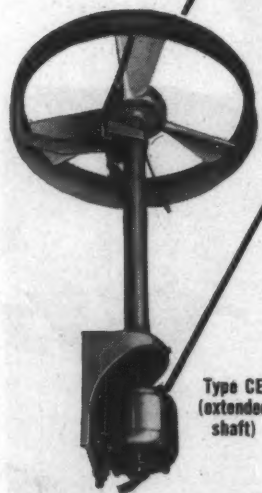
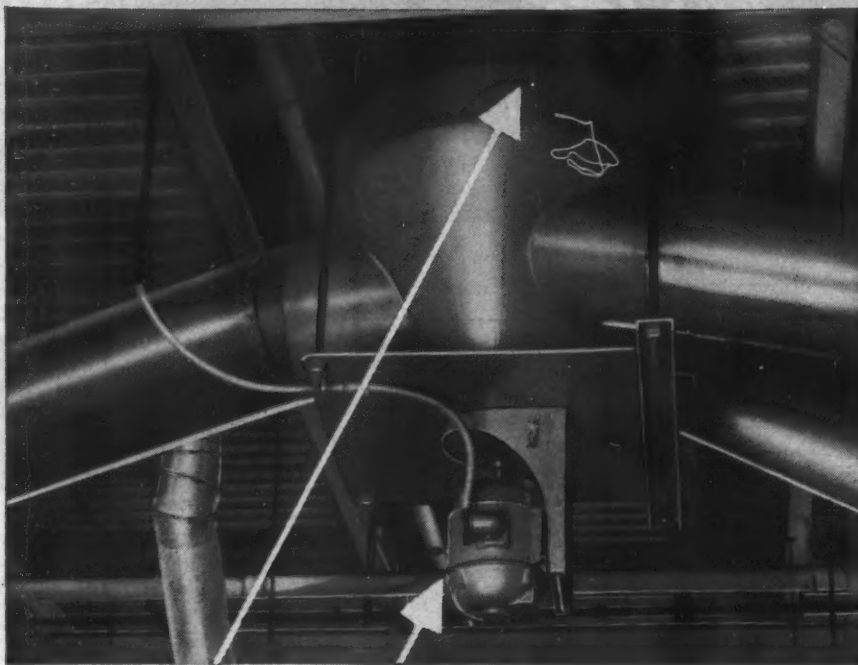
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THE RECORD REPORTS

(Continued from page 16)

Safety shall set up alternative provisions covering the use of materials and structural systems in dwellings, which shall then become acceptable throughout the state, despite the possibly differing requirements of local building codes. When the Board of Standards has satisfied itself regarding any new material or construction system, and has brought out its regulations, a local building inspector must issue a permit if the material or construction system to be used complies with these state regulations.

Connecticut Acts

Growing out of recommendations originating during a state-wide planning and zoning clinic held at Hartford in November, 1946, three new enabling acts will strengthen the home rule of the people of Connecticut and make possible more realistic and active community development. The three acts are: (1) the Municipal Planning Act; (2) the Regional Planning Act; and (3) a Zoning Enabling Act.

Highlights of the three are the enabling of any municipality, town, city or borough in the state to create a planning commission; the permitting of contiguous towns with planning commissions to join in the creation of regional planning commissions; and a general clarification of the state's zoning program.

Cleveland's New Code

The preliminary draft of Cleveland's new building code, prepared by Emil J. Szendy, A.I.A., Code Consultant, is approaching completion and public hearings are scheduled to begin in the near future.

A special effort is being made to phrase and arrange the code in such fashion that maximum clarity will result. The code is being drafted to facilitate its use: chapters are included which outline basic requirements for each classification of occupancy, making it possible for the architect or engineer to determine essential requirements for any building without detailed study of the entire code.

NEW CONTEST

American architects and engineers are invited to submit plans for the construction of a Roman Catholic Basilica to be erected in the town of Higüey, Dominican Republic, under the sponsorship of the Dominican government.

The Basilica, to be erected on a large isolated site, free from surrounding buildings, should accommodate 3000

(Continued on page 130)

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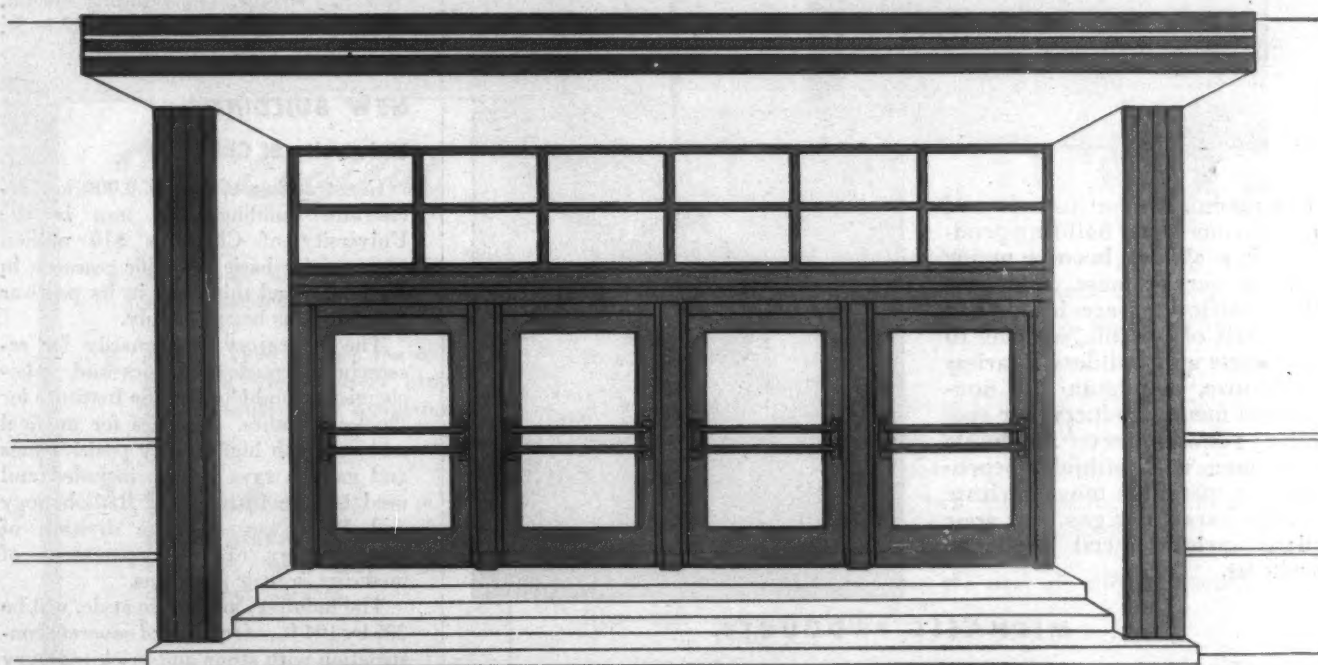
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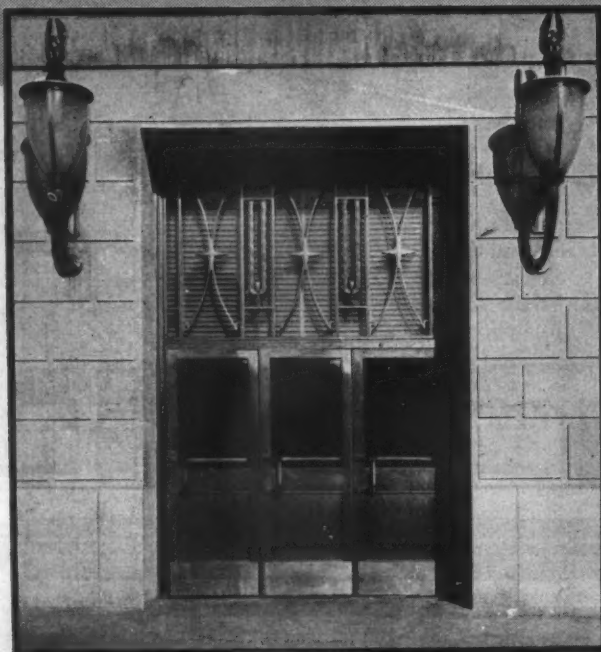
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THE RECORD REPORTS

(Continued from page 128)

persons. The amount allocated for its construction is \$600,000.

All projects submitted will become the property of the Dominican government, which reserves the right to entrust the execution of the project to the winning contestant or to any other person. The contest carries a first prize of \$2000 in cash, and closes November 5, 1947. For further information address Julio Ortega Frier, Ambassador, Dominican Embassy, 4500 16th St., N. W., Washington, D. C.

HOME DESIGN PROGRAM

Good Housekeeping Magazine invites qualified architects in the United States to submit recent examples of their residential work for publication in a new editorial series of "Homes America Wants."

The sum of \$500 will be paid the architect for each house submitted and published. At least one house is to be shown each month in a continuing program to encourage better residential architecture. Full credit will be given the architect in the publication.

For full details address Joseph B. Mason, Director, The Building Forum, *Good Housekeeping Magazine*, 57th St. at 8th Ave., New York 19, N. Y.

NEW BUILDINGS

University of Chicago

Construction of a \$1,250,000 ion accelerator building, first unit in the University of Chicago's \$10 million program for basic scientific research in nucleonics and third peg in its postwar building, was begun in July.

The laboratory is primarily for researches in nuclear physics and radiochemistry conducted by the Institute for Nuclear Studies. Facilities for medical research with high energy positive ions and gamma rays will be included and used by the Institute of Radiobiology and Biophysics and the division of roentgenology of the department of medicine in their programs.

The building, modern in style, will be 205 by 104 ft., of reinforced concrete construction with stone and brick masonry walls. The center will feature a crane bay the full length of the building, 50 ft. wide and 33 ft. above the floor. The crane will be capable of handling 70 tons. The upper part of this bay on the first floor level will be surrounded by a balcony on which offices, laboratories, switchgear and capacitor rooms will be located.

Architects for the project are Schmidt, Garden and Erikson.

(Continued on page 132)

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THE RECORD REPORTS

(Continued from page 130)

Housing Project

Working drawings for Farragut Houses, a New York City Housing Authority permanent low-rent project, are approaching completion and are being studied by the Authority prior to final approval.

The development, which will accommodate 1400 families, will be located in Brooklyn on a site bounded by York, Concord, Navy and Bridge Streets. The 10 buildings called for by the plans will embody a five-point ground plan intended to make for economy in operation as well as original cost and to make possible maximum use, within statutory limitations, of facilities such as stairways and elevators. All buildings will be 14 stories high and will include craft and social rooms. Every apartment will have three exposures.

Architectural plans for the project are being drawn by Alfred Fellheimer, Steward Wagner and Carl A. Vollmer. Other phases of the planning are being handled by Fred N. Severud, structural engineering consultant; Paul Wunderlich, mechanical engineering consultant; and A. Carl Stelling Associates, landscape architects and site planners.

MATERIALS REPORT

May production of the 19 construction materials included in the Composite Index Series declined 0.4 points, or 0.3 per cent, from the April level, the Construction Division, Department of Commerce, has announced.

While this decline may appear insignificant, CD points out that normally May production of construction materials is higher than that for April. For example, production in May, 1946 was 7.3 points higher than in April, a gain of 6 per cent. However, the general level of production reported for May, 1947 was 7.7 per cent higher than that for May of last year.

Output of gypsum board and lath, recently reported to be in short supply by the Office of the Housing Expediter as a result of declines in paper liner inventory, continued to increase in May. Production of clay sewer pipe, which had been declining steadily during the early part of this year, also recorded an increase. Other items recording increases were lumber, hardwood flooring, brick, rigid steel conduit and fittings.

Two important items in the index—cement and wire nails and staples—registered substantial declines in production in May as compared with April. The decline in the output of nails was anticipated following the end of premium payments.

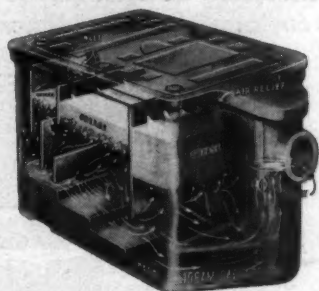
(Continued on page 134)

WHEN THE PROBLEM
IS
GREASE

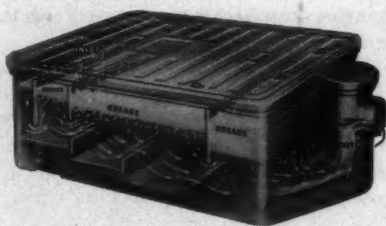
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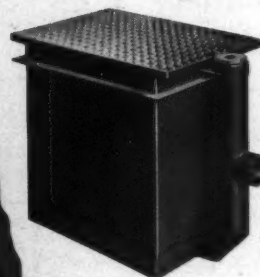
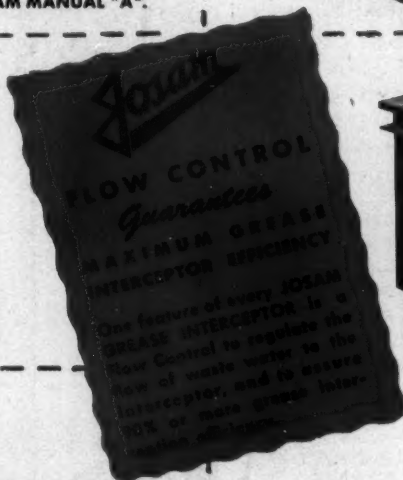
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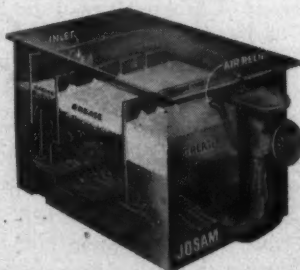
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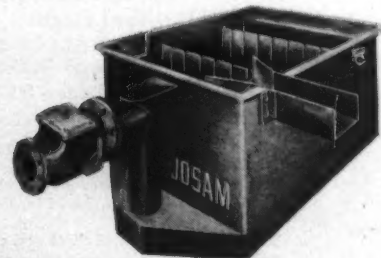


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OFFICE NOTES

Offices Opened, Reopened

Joseph M. Barrow, Architect, has announced the opening of an office at 713 W. Illinois St., Urbana, Ill.

A. L. Klingbeil has opened an office for the practice of architecture in the Pullen Bldg., 399 N. E. 79th St., Miami, Fla.

Lloyd B. Knutsen, Architect, has resumed the practice of architecture at

527 Hoeschler Bldg., La Crosse, Wis. Mr. Knutsen formerly was a partner in the firm of Knutsen and Brunet, Architects.

Roy M. Schoenbrod, Architect and Engineer, has opened an office for the general practice of architecture at 8 S. Dearborn St., Chicago 3, Ill.

Chloethiel Woodard Smith, A.I.A. has resumed his architectural practice with offices at 814 17th St., N.W., Washington 6, D. C.

New Addresses

The following new addresses have been announced:

Harry L. Alper, Architect, 565 Fifth Ave., Suite 1011, New York City.

Martin L. Beck, A.I.A., 10 Nassau St., Princeton, N. J.

Norman M. Giller, Architect, 1575 Washington Ave., Miami Beach 39, Fla.

Leopold Hauf, Jr., A.I.A., 101 Walsh Rd., Lansdowne, Penn.

Page & Steele, Architects, 72 St. Clair Ave. W., Toronto, Canada.

Robinson, Keefe & Devane, Architects (John J. Robinson, R. C. Keefe, P. J. Robinson, and A. D. Devane), No. 22, Lower Baggot St., Dublin, Ireland.

Rupert Construction Co., 3400 Lancaster Ave., Wilmington, Del.

Firm Changes

The firm of George Farkas Interiors, Inc., has changed its name to George Farkas, Incorporated. The address remains the same: 954 41st St., Miami Beach, Fla.

W. W. Meyers and R. A. Krider, Registered Architects, and F. D. Ellenberger, Registered Engineer, have announced their association for the practice of architecture under the firm name of Meyers & Krider, Architects, with offices at 407 Commerce Bldg., Erie, Penn.

O'Hara, Hedlander and Edson, Architects (Charles E. O'Hara, R. Lincoln Hedlander, Stuart F. Edson and Andre Halasz), have announced that Eli Constantine has become a member of the firm.

Noah N. Sherman, Architect, has announced the dissolving of the firm of Sherman & Zamshnick, Architects, as of July 1st. Mr. Sherman is continuing his architectural practice at the same address, 62 William St., New York City.

APPOINTMENTS

Arthur F. Deam, Professor of Design, has been appointed Chairman of the Department of Architecture of the University of Pennsylvania. In charge of design at the University of Illinois from 1930 to 1945, Professor Deam has been at Pennsylvania for the past two years. He is patron of the T Square Club Atelier of Philadelphia.

Recent additions to the staff of the School of Architecture and Allied Arts at the University of Oregon include Professors Marion Dean Ross and Theodore O. Reyhner. Mr. Ross will assume charge in the course of History of Architecture on both graduate and undergraduate levels. Mr. Reyhner will be an associate in the Structural Design curriculum.

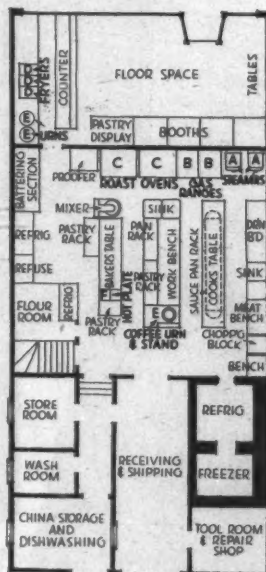
Edward Steichen has been appointed Director of the Department of Photography of the Museum of Modern Art, New York City.

KITCHEN PLAN NO. 43:

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This cleverly designed kitchen serves a multitude of Chicken Roost customers in Providence, Rhode Island

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Designed by Albert Kandarian, Prop. Chicken Roost
Installed by the Murray Company, Providence, Rhode Island

To serve thousands of chickens, chicken pies, pastry, pies, rolls and biscuits daily not alone in his popular restaurants, but also "over-the-counter" and through a unique "delivered-ready-to-eat" service, Mr. Kandarian designed this modern, "Specialized Cooking Tool" commissary kitchen, an important functioning part of which are two versatile Blodgett No. 952 Gas-Fired Ovens, with four 42" x 32" x 12" separately controlled compartments.

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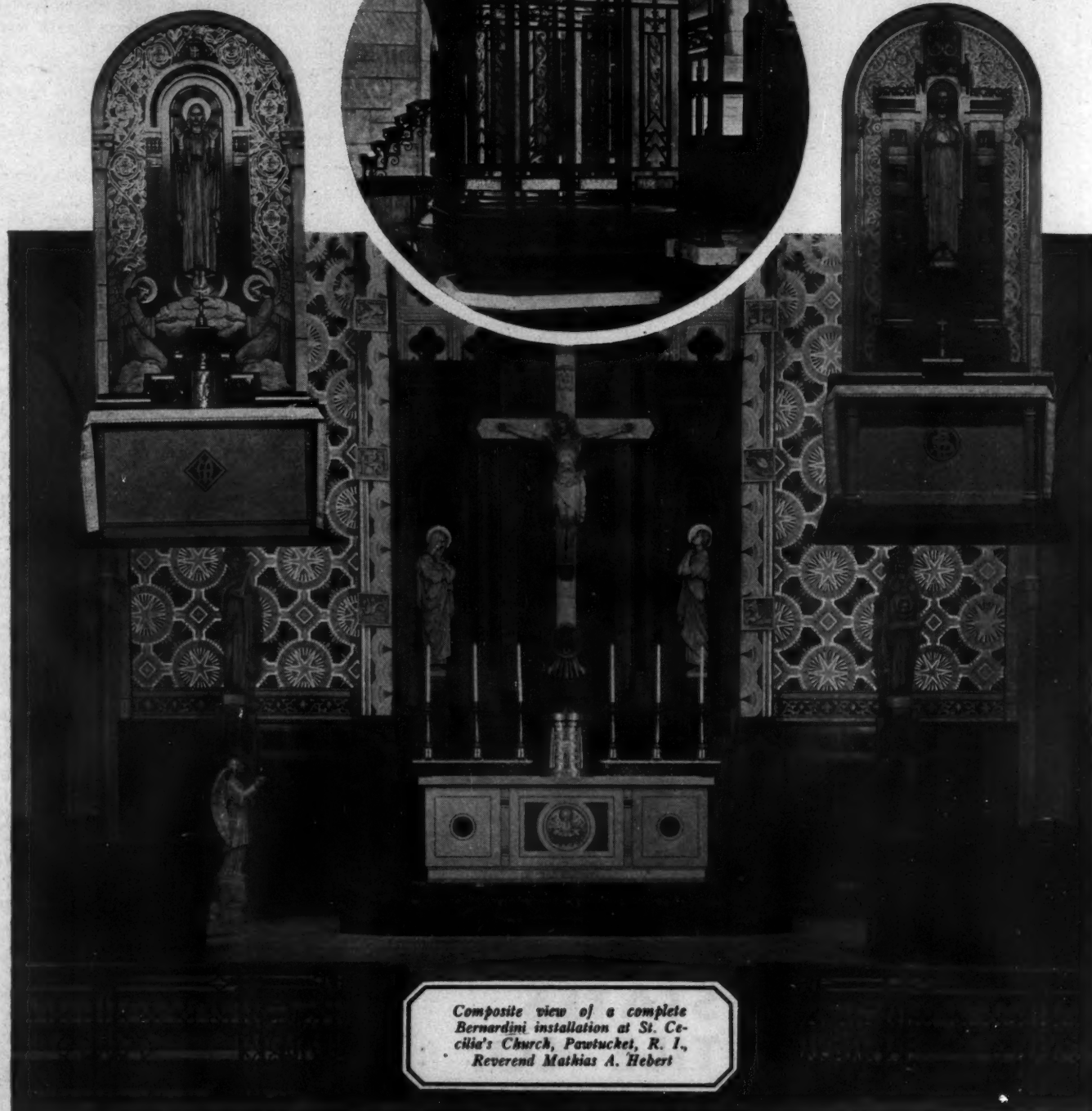
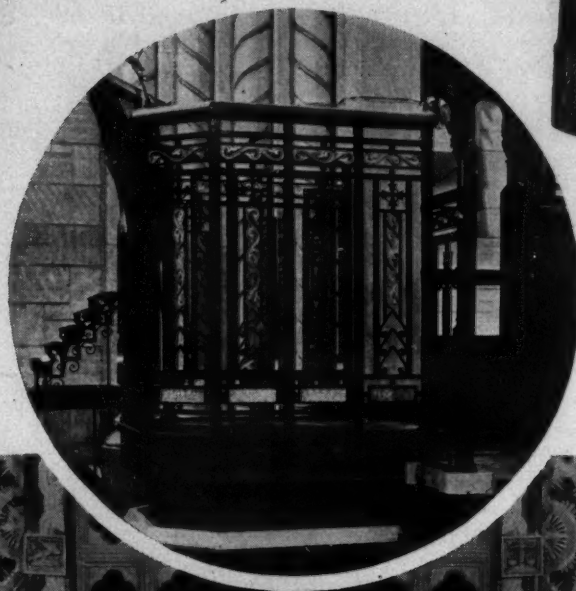
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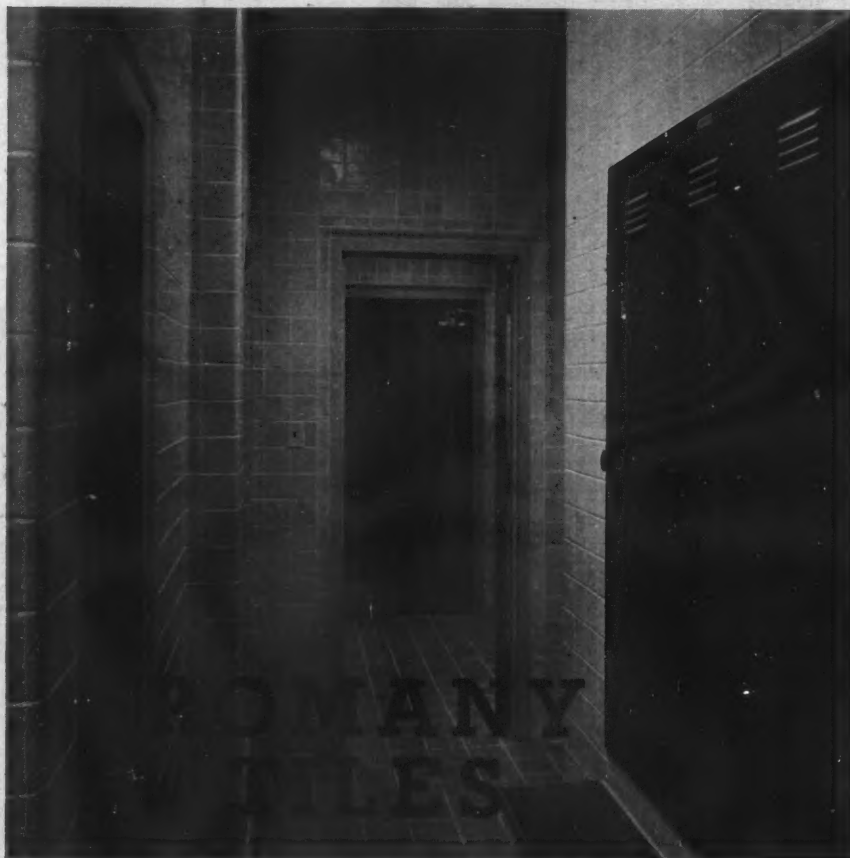
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HOUSING AND THE 80th CONGRESS *(Continued from page 80)*

numerous bills introduced in both houses, and ranging from across-the-board rental increases to the maintenance of the status quo on residential rents. Title II of the Act as finally passed terminated federal rent control over hotels, motor courts and tourist homes serving transient guests, housing completed on or after February 1, 1947, and housing which was not rented at any time between February 1, 1945 and January 31, 1947. It continues through

February 29, 1948 rent control over housing in defense rental areas.

The law also permits rent increases not exceeding 15 per cent of maximum rent prevailing on June 30, provided such increases are incorporated in valid written leases, to take effect after July 1, 1947 and before December 31, 1947 and to expire on December 31, 1948 or later. The law decontrols, after December 31, 1947, all units involved in such voluntary leases.



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In April, the President abolished as of June 1 the Office of Temporary Controls, Office of Price Administration, Civilian Production Administration and the Office of War Manpower and Reconversion. The latter three had been absorbed into the OTC for gradual liquidation late in 1946. In May, the rent control functions of OPA were shifted to the Office of the Housing Expediter, to which building controls of the CPA had previously been assigned.

Reorganization Plan No. 3

For more than a year, President Truman had shown great concern over the possible fate of the National Housing Agency, which was set up early in 1942 to coordinate the federal government's numerous agencies concerned with war housing. Under the law, the agency would have been dissolved within six months of the legal termination of World War II. The 79th Congress had failed to approve the housing reorganization powers the President sought.

On May 27 the President resubmitted to Congress, with modifications, Reorganization Plan No. 3. Under the parliamentary procedure of submission, the plan required rejection by both Houses of Congress within 60 days or it automatically would become law.

On June 18, following rejection of the plan by the House Committee on Expenditures in the Executive Departments, the House of Representatives voted unanimously to kill it. Two weeks later, the Senate Banking Committee, by a 7 to 6 vote, approved it. On July 22, the Senate voted to approve it 47 to 38, with Senator Taft, the Republican leader, in a complete reversal of his stand the year before, fighting alongside Senator Barkley, the Democratic leader, for approval of the President's plan. It therefore became law.

Reorganization Plan No. 3 sets up the Housing and Home Finance Agency, and replaces the wartime National Housing Agency. Under the new organization, there is one administrator who "shall be responsible for the general supervision and coordination of the functions of the (three) constituent agencies," namely: (1) The Federal Home Loan Bank Board administering the Federal Savings and Loan Insurance Corporation, the Home Owners' Loan Corporation and the Federal Home Loan Bank system; (2) the Federal Housing Administration with the same functions as prescribed under the National Housing Act of 1934; and (3) the Public Housing Administration, taking over the functions of the United States Housing Authority and "certain remaining housing activities (Defense Homes Corporation) pending the completion of their liquidation."

(Continued on page 138)

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AIR FURNACES SUPPLY HUNDREDS OF G. I. HOMES
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Hundreds of G.I. families are living in prefabs* in Peoria—
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And what a system! With a house heat loss of 45,000 BTU's, the
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Reorganization Plan No. 3 also established the National Housing Council to assist the HAHFA Administrator. The functions of the Council are of a general, coordinating nature. The Council consists of the HAHFA Administrator, the Chairman of the Reconstruction Finance Corporation, three members of the Federal Home Loan Bank Board, the Commissioners of the Federal Housing Administration, and the Secretary of Agriculture.

Investigations of the Building Industry

Two Congressional investigations of the housing and building industry were authorized by the 80th Congress.

The first (the McCarthy-Wolcott resolution) authorized the appointment of a 14-member joint investigating committee of the House and Senate Banking and Currency Committees, comprised of seven members from each House. The committee's report to Congress is to be submitted by March 15, 1948, and will

cover the following specific fields:

The extent of the need for housing in the United States; the extent, if any, to which shortages in building materials are contributing to the housing shortage; reasons for the existing high costs of building materials and housing, and action which may be taken to reduce these costs; all factors (of whatever kind and nature) which contribute to existing high costs of housing and which prevent speedy construction of adequate housing to meet the nation's needs, and the action which may be taken to eliminate such factors; the extent to which archaic building codes contribute to the existing shortage and excessive cost of housing; the operation of existing federal legislation in the field of housing; the operation of government housing agencies; the availability of private capital and government loans to finance housing, and other problems the committee deems significant.

The second investigation, authorized by House Resolution No. 3 of February 26, 1947, has already been undertaken by a sub-committee of the House Committee on Education and Labor under the chairmanship of Representative Ralph W. Gwinn, a Republican, of New York.

This investigation is being directed to uncover data on monopoly and restrictive practices affecting the building industry, including municipal laws, licenses or regulations that curb building activity. The subcommittee is inquiring into material and labor costs and questionable practices relating to the economics of construction generally, and especially of small homes and rental property for moderate income groups.

The FPHA Investigation

The Federal Public Housing Authority was criticized in a report prepared by investigators for the Government Corporation Subcommittee of the House Appropriations Committee, and revealed in part by committee members in April.

Some of the charges were: That the disposition of permanent war housing was a deliberate failure, that FPHA sought to perpetuate itself by transferring the public housing projects to mutual ownership which would require federal supervision; that the temporary veterans' housing program was a failure marked by careless planning and exorbitant administrative costs.

This report of FPHA was followed a few weeks later by another adverse report of the General Accounting Office which found the accounting of the public housing authority to be "inadequate, inaccurate and otherwise deficient for the fiscal year 1945 and prior years." The Director of the General Accounting Office declared that the condition of FPHA accounts "is such as to render

(Continued on page 140)

beautiful
beautiful

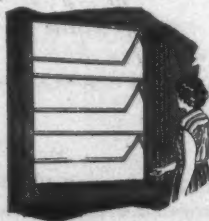
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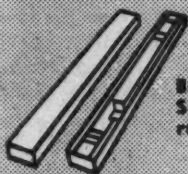


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3700 n. w. 25th st., miami, fla.
new york office: 21 west street
whitehall 3-6860

THE A. B. C. of ATLAS SAVINGS.



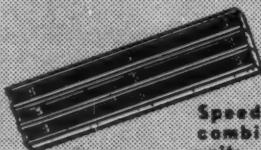
Use Atlas
Speed Forms
for founda-
tions, floors and
walls.



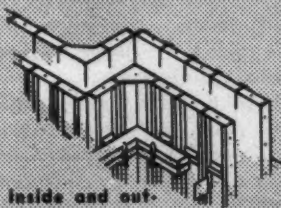
Basic unit, the
Speed Panel,
rugged steel.



Ingenious
quick-action
wedge bolt, for
rapid joining or
disassembly.



Speed panels
combine into
units of three
or more for
quick handling.



Inside and out-
side corners
available, also
special panels.



Easy to get a
house founda-
tion a day -
Similar speed
on larger
operations.

FORMS ARE 60% OF POURED CONCRETE COSTS

ATLAS WILL SAVE AS MUCH
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Because

- They Cut On-Site Labor in Half
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ATLAS FORMS do what today's competi-
tive building market demands -- re-
duce costs.

In home, apartment, factory, bridge
or tunnel building, Atlas Forms mean
speed, convenience, and economy.
They are easy and quick to erect,
simple and fast to strip. Boxes,
inserts, wiring, etc. easily accom-
modated. The completed job has that
smooth finished appearance, no knot
holes or grain marks. Let us prove
to you that you can save time and
money on poured concrete construc-
tion. Just fill in and mail the cou-
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I am interested in reducing form costs in the following types
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Name

Title

Company

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them inauditable or make the auditing of them inordinately costly."

The House Appropriations Committee in June received a report from Subcommittee Chairman Jensen. Investigators found that more than 31 per cent of all public housing is occupied by persons whose incomes are higher than the maximum set or are otherwise ineligible; that the provision of the United States Housing Act calling for the elimination of one slum dwelling unit for every

dwelling unit built by the government has been "almost completely ignored"; that 36 per cent of FPHA employees received salaries in excess of \$4500, a proportion higher than that in any other government agency.

After the adjournment of Congress, it was announced by Representative Walter C. Ploeser, a Republican, of Missouri, that an investigation of charges of maladministration of the Federal Public Housing Authority would

be made during the Congressional recess by the House Expenditures Committee in Executive Offices, which was voted funds to continue its investigation of the use of Treasury funds for government publicity and the circulation of propaganda.

The Taft-Ellender-Wagner Bill

Early in March, the Senate received for the third time in less than two years a comprehensive housing bill. Officially known as the National Housing Commission Bill, the new version was familiarly called the Taft-Ellender-Wagner bill, and differed very little from the previous version known as the Wagner-Ellender-Taft bill, and which failed to pass in the 79th Congress. The companion bill was introduced in the House by Representative Jacob K. Javits, a Republican, of New York at the time the Senate received the T-E-W bill.

The Senate Committee on Banking and Currency, to which the bill was referred, approved it by a 7 to 6 vote on April 23. The Committee's 50-page report issued on April 24 declared that the bill was "imperatively necessary," but the Senate as a whole apparently disagreed for it was never brought to the floor. The bill died in the House Banking and Currency Committee.

The Taft-Hartley Act

The Labor Management Relations Act of 1947, passed over the President's veto late in June, and applicable to interstate commerce, may or may not have appreciable effect on the construction industry.

Under the National Labor Relations Act of 1935, which is amended by the Labor Management Relations Act of 1947, the building industry generally was not recognized as being importantly affected by its provisions.

There is, however, some possibility that the new and enlarged National Labor Relations Board may broaden the field with new interpretations and that some of the bill's broader provisions, such as the outlawing of the closed shop, the ban on jurisdictional strikes and secondary boycotts may in the future be held applicable to the construction industry.

An attorney for one building trades employers' association summed up the general attitude of the industry in these words: "Only time will tell to what extent and in what manner the new law will affect building work. The industry is very complex, and while building site workers are engaged in a local industry, intrastate and not interstate, actions which may affect interstate commerce or the flow of materials in commerce can arise on a local building site. Only the courts can decide these complicated questions and that may take years."



A beautiful residence garage using two sizes of standard Barcol OVERdoors.



A standard Barcol OVERdoor in an ice-manufacturing plant storeroom.



This modernized horse barn employs standard Barcol OVERdoors for space and heat saving.



Small manufacturing plants, service garages, and the like have standard Barcol OVERdoors.

Standard Barcol OVERdoors

**SOLVE LOTS OF PROBLEMS
—IN LOTS OF PLACES...**

**Only the Barcol
OVERdoor
HAS ALL OF THESE FEATURES**

1. ROLLER-CRANK CLOSING ACTION.
2. SELF-LATCHING BOLTS.
3. TWIN-TORSION TAILORED SPRINGS.
4. CONTINUOUS VERTICAL TRACK BRACKETS.

Sturdy construction, readily adaptable design, and ease of operation make the standard Barcol OVERdoor useful for many other applications in addition to its regular use on residence garages. A few of these are suggested in the pictures above. Remember—consider a standard Barcol OVERdoor whenever you have an unusual or difficult door problem that needs solving. Consult your Barcol representative.

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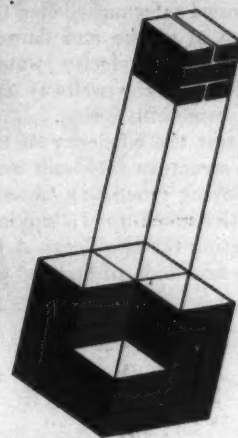
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These two books—"Tile Engineering" and "Brick Engineering" are basic handbooks for modular coordination—the new scheme of design. They are essential to all who employ modular coordination in their work . . . for the smallest dwelling to the largest building.

Each book has over 400 pages of helpful information. Included are brick and tile masonry, footings, foundations, floors, walls, gardens, R-B-M columns and piers, moisture control, estimating tables, standard specifications and many other details. Each is well printed and bound—well illustrated.

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Please send me copy of "Brick Engineering" ☐

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Name _____ Profession _____

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(Continued from page 119)

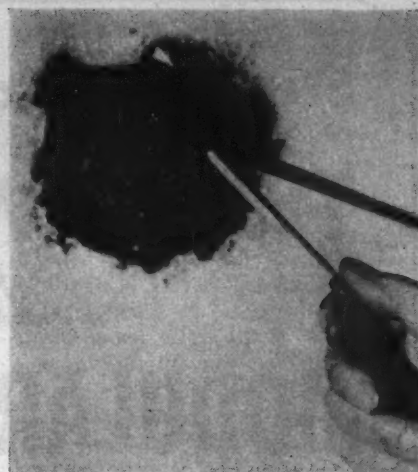
such as in a flash fire, and the previously mentioned safeguards failed to block the passage of smoke and flames into the wellway, high-velocity water jets directed down the wellway from above would come into action.

To test the efficiency of the system, a test structure was built on the Grinnell proving grounds: a two-story building with a mock-up of a moving stairway connecting the two floors. A fire started on the first floor, of burning alcohol and

smoke bombs, quickly drove observers from the area but failed to pierce the spray curtain about the wellway. Observers on the floor above reported that the air was fresh and unaffected.

FIRE-PROTECTIVE PAINT

A new paint, *Albi-R*, is said not only to be non-inflammable but also an actual retardant to the spread of fire. When flame is applied to a surface coated with it, the paint breaks out into



Under blowtorch, special paint puffs out to form protective blanket of insulation

IMPLEMENT OF ARCHITECTURE



Schlage lock trim offers a flexibility that ranges from stately, conservative locks to modern, contemporary designs. Knobs can be placed *anywhere* on the door. There is a Schlage design to effectively complement any scheme of decoration or architecture. For information on specific lock trim, see your builders' hardware man, or write direct to Schlage Lock Company, P. O. Box 3324, San Francisco.

SCHLAGE

LOCK COMPANY

SAN FRANCISCO • NEW YORK

ORIGINATORS OF THE CYLINDRICAL LOCK

a rash of small and large blisters which puff out to form a blanket of protective insulation between flames and the surface underneath. This factor prevents flash fires and greatly retards the spread of flames. It is listed by Underwriters' Laboratories, Inc., and carries the approval of the New York City Board of Standards and Appeals for application on wood, fiber board, acoustical board and other combustible materials. The paint was developed in the laboratories of Harvard University by Dr. Grinnell Jones and Dr. Walter Juda under a program initiated by the manufacturer: Albi Chemical Corp., 9 Park Pl., New York, N. Y.

GLASS-BLOCK VENTILATORS

Window ventilator units, especially designed for glass block walls, have frames of extruded aluminum which are set in the same mortar as that used in laying the blocks. Sizes are scaled to the dimensions of 6-in. and 8-in. glass blocks in various multiples of their length and height. Also available are adjustable ventilating fans for installation in glass block walls. Winco Ventilator Co., Inc., 6063 Maple Ave., St. Louis, Mo.

EMERGENCY LIGHTING

A means of providing emergency lighting within buildings is offered by *Exide lighting battery systems*, made in a wide range of sizes from a small portable type with lamp attached to those of large capacities which will operate key lighting throughout a large building. Emergency lighting safeguards are needed in many types of buildings: hospitals, hotels, and places of public assembly — for obvious reasons — and also in many industrial plants where lighting failure might mean interruption of important industrial processes or present a hazard to workmen. The emergency systems operate as follows: When normal power

(Continued on page 144)

Welded Construction Simplifies Face-Lifting Operation

By **WILLIAM B. MILLER, C. E.,**
Consulting Engineer for Walker &
Weeks, Architects, Cleveland, Ohio

INTERESTING problems in the integration of structural iron work in two adjacent buildings were encountered in a remodeling job on the Williamson and Otis Buildings in Cleveland.

It was desired to extend a bank's quarters from the Williamson Building into the Otis Building, but this was complicated by the fact that the front of the Otis Building projected 4 inches over the building line. It was necessary to set back this front and apply a new front of terra cotta and granite to both buildings so that the architectural design would carry through.

The front of the Otis Building, being wall bearing, was supported at the second floor line by a box Warren type truss. In order to set the front back it was necessary to slice this truss in half in a longitudinal direction. The architectural design was so worked out that a girder beam could be erected below this truss and masonry walls carried up to support existing walls.

The first step was to install temporary shoring to carry the load of existing walls during alterations. Fig. 1 shows the welding of temporary needle beams to the bottom flange of the old truss. Welding was used

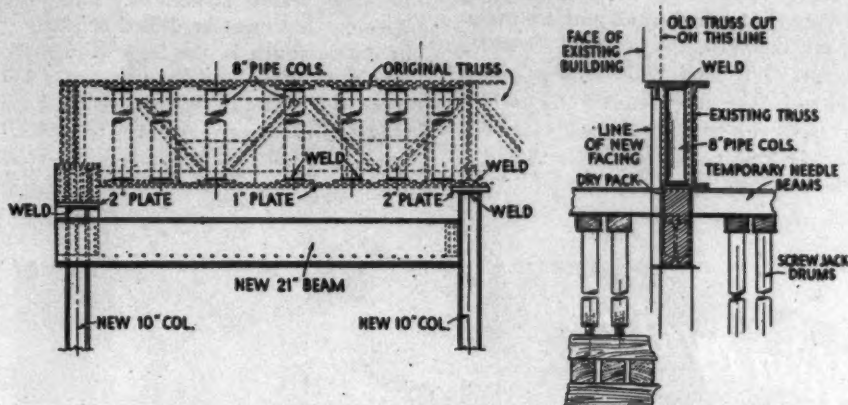


Fig. 2. Front view and cross-section showing alterations made in order to set wall back.

to avoid any possible movement in the needle beams. Next, tubular struts were arc welded into the old truss at frequent intervals so that underpinning loads could be carried directly through the truss into the masonry wall above. Fig. 1 shows two of these tubular struts directly behind a gusset plate at a web intersection of the old truss.

Fig. 2, a general sketch, shows the new 21-inch I-beam erected on new columns beneath the old truss to assume the wall-bearing load and support new masonry. Cross-section shows the tubular struts and the lines of the old and new facing. A masonry wall was then installed from the top of this beam and dry packed to the underside of the truss. The truss was

then cut longitudinally and filled in with masonry between the tubular struts to complete the job. After building loads were properly transferred to new 21" beam (located below old truss), the shoring drums were removed and needle beams flame cut to clear new masonry.

The original columns of the Williamson Building, erected in the 1890's, were made by combining four Z-bars with exterior plates and interior lacing. Some of this lacing was strengthened during this remodeling with arc welding. To connect new beams into this type of column it was necessary to weld new plates between existing lacing of this column. At other points brackets were welded as shown in Fig. 3.



Fig. 1. Welding bottom of truss to needle beams acting as temporary support.



Fig. 3. Brackets from 21-inch I-beam are welded to existing column.

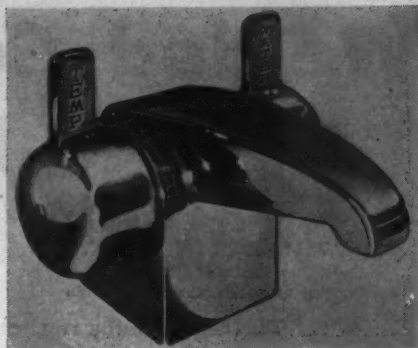
The above is published by **LINCOLN ELECTRIC** in the interests of progress.
Structural Design Studies are available free to engineers and architects. Write The Lincoln Electric Company, Dept. 264, Cleveland 1, Ohio.

supply is interrupted, a switch in the emergency circuit immediately cuts in the emergency lighting batteries. After normal lighting has been restored, the emergency batteries are automatically recharged at a high rate, and are maintained thereafter by a small "trickle" charge. Only maintenance required is said to be the addition of water to battery cells two or three times a year. The Electric Storage Battery Co., Philadelphia 32, Penn.

HANGERS FOR SPRINKLERS

Automatic stud welding is announced as an improved method for fastening hanger connections for sprinkler systems to steel frame structures. The only opening that must be drilled or chipped in ceiling finish is one large enough to admit the insertion of the stud and ferrule, which eliminates the necessity for chipping out large openings to accommodate beam clamps. Nelson Stud Welding Corp., Lorain, Ohio.

(Continued from page 142)



Lavatory faucet has dual controls governing water temperature and volume



architects appreciate

... the many advantages of Amtico Rubber Tile. Designed to meet their exacting specifications, Amtico Rubber Tile is the ideal flooring for public and private buildings, where long-lasting beauty and silence are a primary consideration.

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Thirteen beautiful, marbleized colors make possible many interesting floor designs, and our greatly increased capacity assures prompt delivery. Write for illustrated folder and samples.

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TRENTON, NEW JERSEY

SELECTOR FAUCET

A newly announced faucet for lavatories features dual controls for water volume and temperature. After the amount of water has been selected by one lever, a turn of the other varies its temperature from cold to hot. The faucet is made in both domestic and commercial models. Cole Valve Co., 212 Lonsdale Bldg., Duluth 2, Minn.

DIRECTED LIGHTING

Direct-A-Beam, an adjustable housing for PAR 30 or R40 spot or floor lamps, is especially designed for the high-intensity lighting of displays, merchandise, murals, desks, or office machines. Direction of light can be adjusted by a finger touch or window stick, since the lamp in its recessed housing rotates a full 360° horizontally and tilts downward within 90°. Concentric louvers can be applied to the lens, and color filters in red, blue, green, or amber. McPhilben Mfg. Co., Inc., 102 Wooster St., New York 12, N. Y.

NEW FLUORESCENT SHAPE

A new semi-circular fluorescent lamp, known as *Circlarc*, widens the range of fluorescent lighting, for which only straight and circular lamps were heretofore available. The lamp is an 18-watt tube curved to form a half circle 12 in. in diam. Two can be joined to form a complete circle of light. Rated life (at 3 hours burning per start) is 2500 hours. Westinghouse Electric Corp., 306 Fourth Ave., Box 1017, Pittsburgh 30, Penn.

SLIMLINE LAMPS

The operating range of *Slimlines*, small-diameter fluorescent tubes ranging up to 8 ft. in length, has been extended to 300 milliamperes. This increased current range is said to give more light per foot, with no change in rated lamp life, and increase the lamp's usefulness for industrial and commercial lighting. The higher rating will require special ballasts. Lamp Dept., General Electric Co., Nela Park, Cleveland 12.

(Continued on page 146)



Thousands of tests, under all kinds of service conditions, prove that "Dutch Boy" Red Lead gives metal extra protection

4 Ways RED LEAD RESISTS EFFECTS OF WATER ...guards against Rust

Maintenance engineers have long recognized Red Lead as the "standard" metal protective paint. This acceptance is based, to a great extent, on its marked ability to stand up against moisture, a powerful factor in the rusting process.

Now, scientific research into the inherent properties of the pigment itself, shows just how and why Red Lead resists the effects of water. Briefly, there are four reasons:

1. Red Lead resists water "pick-up"—If a series of various metal protective paint films are weighed and then submerged in water (salt or fresh), it is readily noticed, on reweighing after several days immersion, that Red Lead films have outstand-

ing resistance to the absorption, or "pick-up," of water.

2. Red Lead resists passage of moisture—Rusting of metal will not take place if water does not penetrate the paint film to reach the metal. Water permeability tests of paint films (see illustration at lower left) show, beyond question, that Red Lead is one of the most effective metal protective pigments, because of its stubborn resistance to the passage of moisture through the film.

3. Red Lead resists solution by water—The action of water on paint films results in a partial dissolving of the film. Many metal protective films lose a considerable percentage by weight of their films through solution in water. On the other hand, the solubility losses of Red Lead paint films are practically negligible.

4. Red Lead resists distortion by water—Red Lead films have little tendency to shrivel or change in size during immersion in water. This is imperative to good metal protection. For good protection depends on good adhesion, and a paint film maintains better adhesion when it is not distorted by the action of the water.

Remember, too, Red Lead is compatible with practically all vehicles commonly used in metal protective paints, including many of the fast-drying resin types.

Specify RED LEAD for ALL Metal Protective Paints

The rust-resistant properties of Red Lead are so pronounced that it improves any metal protective paint. So, no matter what price you pay, you'll get a better paint if it contains Red Lead.

* * *

The benefit of our extensive experience with metal protective paints for both underwater and atmospheric use is available through our technical staff.

NATIONAL LEAD COMPANY: New York 6; Buffalo 8; Chicago 8; Cincinnati 8; Cleveland 13; St. Louis 1; San Francisco 10; Boston 6, (National Lead Co. of Mass.); Philadelphia 7, (John T. Lewis & Bros. Co.); Pittsburgh 20, (National Lead Co. of Pa.); Charleston 25, W. Va., (Evans Lead Division).

Testing Water Permeability of Paint Films—With this standard apparatus a measure of the amount of water that passes through a unit of film is obtained.

Experiments show that a straight linseed oil film allows three times as much water to pass through the film as when the same film is pigmented with Red Lead.



DUTCH BOY
RED LEAD

(Continued from page 144)

DRAFTING TEMPLATE

A transparent plastic template, known as *Architect's Aid No. 29*, is designed to provide a quick and neat delineation of commonly used architectural symbols. Cut-outs in the plastic give linear outlines of household fixtures, squares, circles, and points for pitch, slope, rise and run; all at the scale of $\frac{1}{4}$ in. equals 1 ft. A 7-in. scale is at one edge. Rapidesign, Inc., Dept. AR, P.O. Box 592, Glendale, Calif.

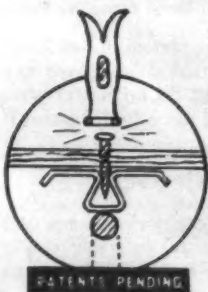
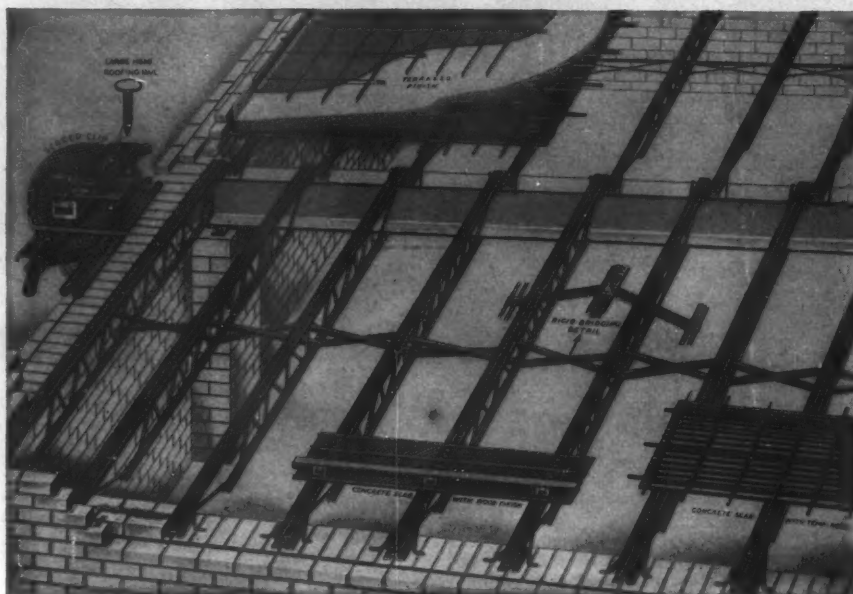
AIR CLEANER

The *Raytheon Home Precipitator* is designed to operate in conjunction with an air-conditioning or warm-air heating system, removing dust particles from the air by electronic precipitation. As the airborne particles pass through an electronic field within the Precipitator, they become positively charged and adhere to collector plates. At infrequent intervals these plates can be flushed clean by a spray of water operated by a



Air cleaner for home use removes dust particles by electronic attraction

MACOMBER V TYPE BAR JOISTS



Here's the original Macomber Bar Joist with the improved top chord that provides secure nailing for flooring materials. The structural convenience of the open web is maintained. The improved top chord holds nails in a vise-like grip. Result: Universal Application. Sizes are determined from standard Steel Joist Institute Load Tables. Catalog upon request.



STEEL JOISTS ROOF TRUSSES ROOF DECKING
ROOF PURLINS LONGSPANS STEEL SIDING

MACOMBER
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valve that forms part of the unit. U. S. Bureau of Standards tests are reported to show an air-cleaning efficiency of 85 to 90 per cent for this electrical method, as compared with only 10 to 20 per cent for mechanical filters. The unit measures 54 in. high, 28 in. wide, and 27 in. deep, and is attached directly to the air intake of the furnace or air-conditioning unit. It has a rating of 1200 cu. ft. of air per minute. Power consumption is quoted as 50 watts per hour. Raytheon Mfg. Co., Waltham, Mass.

FROZEN-FOOD CABINETS FOR STORES

Designed to increase the flexibility of frozen-food services in grocery stores, a new line of *Frigid-Freeze* cabinets are mounted on wheels. These "spot-special" cabinets, for tying in frozen-food sales with related food products, have a 20 cu. ft. capacity and will hold about 250 lb. of frozen food or about 20 dozen packaged items. Refrigeration Corp. of America, Div. of Noma Electric Corp., 55 West 13th St., New York 11, N. Y.

OIL FURNACE

A new "pint-size" oil furnace, measuring only 2 ft. by 4 ft. by 5 ft., is designed to heat a 4- to 7-room house. Large heating capacity is attributed to the design of flue gas and air circulating passages. Complete heating unit is mounted above the blower so that heat is scrubbed from its bottom as well as sides. Heating capacity can be increased in order to heat additional rooms by substituting another nozzle in the pressure-atomizing gun-type burner. The furnace is equipped with Minneapolis-Honeywell controls, room thermostat, automatic draft stabilizer, and oil filter; also, an air filter and automatic humidifier. Kalamazoo Stove & Furnace Co., Rochester Ave., Kalamazoo, Mich.

(Continued on page 148)



*A model for
every building need*

**TILETONE'S
complete line of**

**MODERN DESIGN
SHOWER CABINETS**

Your jobs will be completed on time—and in time—when you specify Tiletone shower cabinets. For Tiletone has three styles available right now. If a built-in installation is desired—Tiletone has a de luxe cabinet combining streamlined beauty with genuine utility. Perhaps a basement installation gets the call—Tiletone utility cabinet is the answer. Or for the new modern corner installation—Tiletone offers something strikingly different. So, for new homes or old, a second bathroom, or basement installation, for office buildings, clubs, apartments or hotels, Tiletone has the models you can recommend with confidence.



MODEL 78

Sizes: 32" x 32" x 80",
36" x 36" x 80" and
40" x 40" x 80" Corner.

Terrazzo receptor • White
enameled aluminum cabinet
Interior lights • Anodized
aluminum glass doors • Ad-
justable shower head • Dial
type mixing valve.



MODEL 48

Size 32" x 32" x 76"

Porcelain enameled re-
ceptor • Aluminum pan-
els finished in white
enamel • Shower curtain
• Shower head • Dual
shower valves.



MODEL 55

Sizes: 32" x 32" x 80",
36" x 36" x 80" and
40" x 40" x 80" corner.

Terrazzo or porcelain enam-
eled receptor • White enam-
eled aluminum cabinet •
Shower curtains • Shower
head • Dual shower valves.

WHY SPECIFY SHOWER CABINETS?

1. A new pre-sold market . . . big demand.
2. Assured satisfaction for the home owner.
3. No delay . . . available today.
4. Easy, fast installation . . . save space.

WHY SPECIFY TILETONE ?

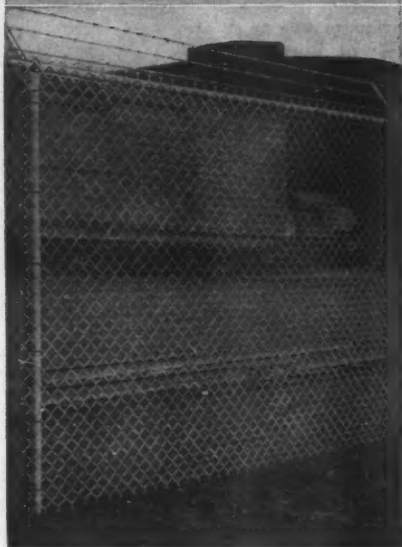
1. A complete line . . . 3 popular styles.
2. New modern design . . . rigid . . . beautiful.
3. Improved receptor base . . . leak-proof drain.
4. Double-baked enamel walls . . . the finish lasts and lasts.

TILETONE
Shower Cabinets

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2323 WAYNE AVE., CHICAGO 14, ILLINOIS

**IMMEDIATELY
AVAILABLE!**

How to SOLVE YOUR CLIENTS' FENCE PROBLEMS!



There are a lot of points to be checked in specifying fence—and Anchor Chain Link Fence's *four exclusive features* hold the answer to all of them. Here's why an Anchor Fence will insure your clients' maximum protection for long years of service:

1. *Deep-Driven Anchors* hold the fence permanently erect and in line, in any soil or weather, yet permit easy relocation where necessary.
2. *Square Frame Gates* are amazingly free from warping and sagging.
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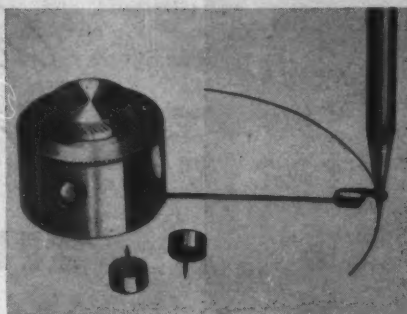
Anchor Fence

Nation-Wide Sales and Erecting Service

ARCHITECTURAL ENGINEERING

TECHNICAL NEWS AND RESEARCH

(Continued from page 146)



Compass draws circles, ellipses, spirals

COMPASS

Circles from 2 in. to 12 in. in diam. can be made with the vest-pocket *Flex-A-Beam* compass. According to the announcement, it may also be used to draw ellipses and spirals. The compass consists of a stretch-proof linen line in an aluminum encased reel. Three push-pins serve as center points, and a releasing button controls the length of line. Stewart-Jackson Instrument Co., Dept. AR, 815 Yale Ave., Los Angeles.

MODULAR DESIGN SCALES

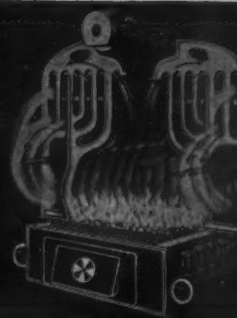
Palmer Time-Saver Scales are designed as a short-cut in the design of brick, structural tile, and concrete block work using the 4-in. module. The scales are of two types. The first is in the form of graph paper divided into 4-in. multiples at the usual architectural scales. This paper is printed in tablet form for "on the job" sketches and quick calculations, or in larger size sheets for tracings. On the latter, horizontal and vertical notations in the margin show both the number of 4-in. modules and the complete dimension for the corresponding number of modules (i.e., 1 module = 4 in.; 10 modules = 3 ft. 4 in., etc.).

The second type of scale is designed to help one determine quickly the correct brick-bond for horizontal and vertical layouts for piers, openings, etc., and to simplify the calculation of horizontal and vertical brick, tile, or concrete block courses. The scales again are based on the 4-in. module, which includes mortar joints when used for masonry construction; and are printed at $\frac{1}{8}$ in., $\frac{1}{4}$ in., and $\frac{3}{4}$ in. to the foot. The Palmer Mfg. Co., 3207 11th St., South, Arlington, Va.

INTERCOM SYSTEM

The *Dictograph Electronic Intercom* is designed to provide complete intercommunication service for small business concerns, small stores, and offices. It features a Master Station which has

(Continued on page 150)



No. 44 Mills Boiler

"There's a long, long trail . . ."

The hot flue gases in an H. B. Smith Cast-Iron Boiler rise directly to the highest surface of the boiler, across to each side, to the front through the upper flue passages, then to the back through lower channels, and finally up the chimney. It's really a long, long trail . . . and not a straight one.

Actually, the gases would rather rush directly to the chimney, but the efficient "Mills" design hinders them at every turn. Instead, they're scientifically-directed along paths which give them a chance to scrub against maximum heating surface and give up more heat.

That's the secret of Smith-Mills efficiency. The result is more heat per fuel unit . . . less fuel used . . . lower fuel costs.

It pays to specify H. B. Smith boilers for industrial, commercial, institutional and residential jobs. If you want to know more important H. B. Smith advantages, send for your free catalog.

H.B. *Smith*
CAST IRON BOILERS

THE H. B. SMITH CO., INC.,
67 Main St., Westfield, Mass.

Offices and Representatives
in Principal Cities

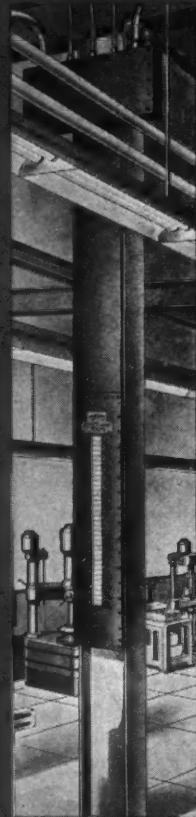
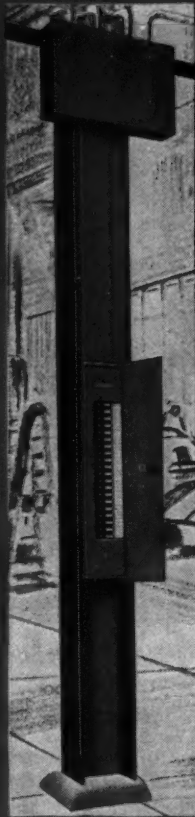


Economical . . . in more ways than one

Space normally available but
unused in "H" Columns . . .

can be utilized for standard \textcircled{FA}
Column Type Panelboards, or . . .

Dust-tite Type for Class II, Groups
F & G Hazardous Locations.



\textcircled{FA} Column Type Panelboards save wall and aisle space by mounting between flanges of "H" columns, and reduce voltage drop with shorter branch circuit runs by locating in center of area controlled.

Available now, in standard or dust-tite construction with \textcircled{FA} Thermag or Dublbrak Circuit Breakers, 4 to 42 branch circuits, 15 to 50 amperes capacity, for 3 or 4 wire mains. Write for Bulletin 301.



Frank Adam Electric Co.

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Makers of BUSDUCT • PANELBOARDS • SWITCHBOARDS • SERVICE
EQUIPMENT • SAFETY SWITCHES • LOAD CENTERS • QUIKHETER

contractors, PLANT electricians



USE THIS NEW

Westinghouse CIF Lighting Catalog

You'll find it invaluable when planning commercial, industrial and floodlighting installations, and when buying lighting equipment.

Here are some of its helpful features:

- **Quick-find Index** of the most complete line of lighting equipment available.
- **Complete data on each fixture...** illustration, application, dimension diagram, illumination design data, list prices and style numbers.
- **Data Section** for layout and design, including application suggestions, recommended levels of illumination for various types of installations, coefficients of illumination tables, etc.

Put your copy of the Westinghouse CIF Catalog to work... you'll find it of real help in solving lighting problems. Westinghouse Electric Corp., Box 868, Pittsburgh 30, Pa. J-04129

Available through 127 Westinghouse Electric Supply Offices and Independent Distributors



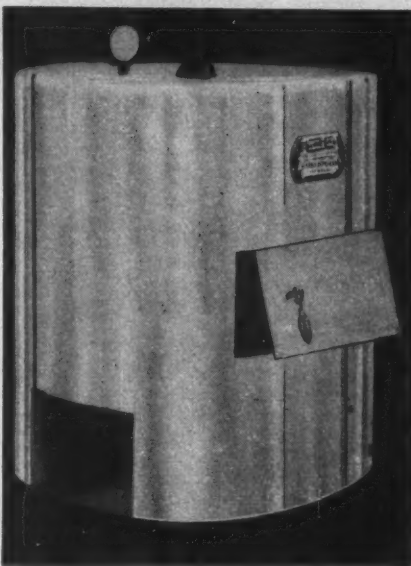
Westinghouse

ARCHITECTURAL ENGINEERING

TECHNICAL NEWS AND RESEARCH

(Continued from page 148)

a 10-call capacity including calls to other Master Stations. Accessories include the Annunciator, which indicates the source of incoming calls originating at substations; and an All-Call Paging Switch which enables the person at the Master Station to use the system for paging. Dictograph Products, Inc., 580 Fifth Ave., New York 19, N. Y.



Hot-water heater is of "tankless" design

TANKLESS WATER HEATER

A new line of all-steel water boilers, called *Automatic Heat*, features a tankless water heating unit that delivers water at a 90° temperature rise, with capacities ranging from 150 to 300 gallons per hr. It is adapted for use with all types of radiation, gravity, or forced circulation; and for firing with oil, gas, or automatic stoker. One model has a tankless heater and compression tank all under the same jacket. All metal parts exposed to flame and water are constructed of 1/4 in. boiler plate, and a molded 1-in. asbestos air cell completely encases the heater. The jacket is of aluminum. Heat Equipment not Inc., 1020 E. 75th St., Chicago 19, Ill.

EASY ON THE EYES

A series of interior "daylight" paint colors has been designed to lessen eye fatigue in industrial plant workers. The colors comprise four off-shades of white scientifically formulated to reduce glare from direct and reflected light. One shade is for upper walls and ceilings, one for machinery above eye level, one for wainscoting and all wall areas at eye level, and one for machinery and traffic lanes below eye level. The colors were

(Continued on page 152)

PIERCE

Amazing

SCIENTIFICALLY DESIGNED

FUSE LINK

Keeps

EQUIPMENT OPERATING

during safe loads

(100% to 200%)

Blow points are accurately computed. Extra surface area carries away heat. Ruggedly built tubular bridge and screen ventilated case contributes to its efficiency and lasting good value.

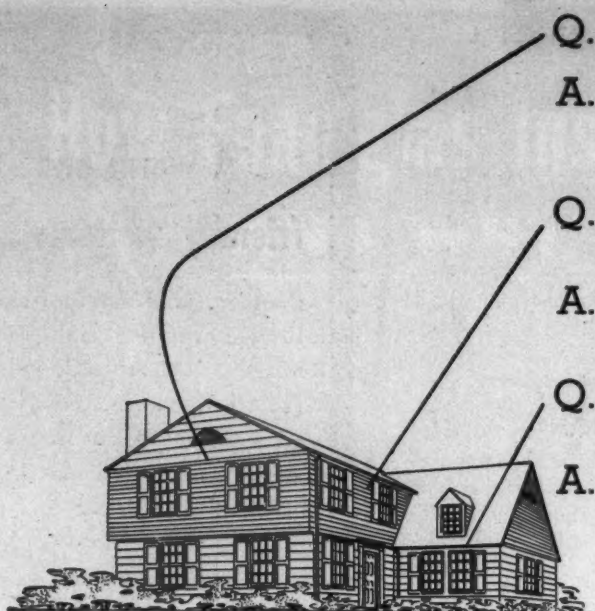
Only

PIERCE HAS

- 1 BALANCED LAG LINK
- 2 SCREENED VENTILATION
- 3 TUBULAR BRIDGE

FREE: Balanced Lag Link to inspect and test. Specify amperage, voltage.





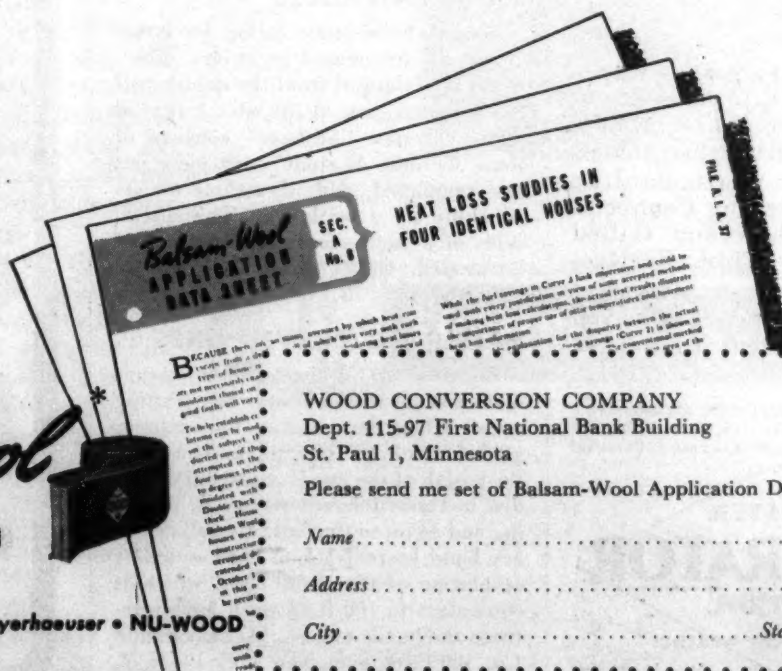
- Q. What is an effective way of preventing heat loss through the stairway to an attic?
 A. See Balsam-Wool Application Data Sheet, Section D, No. 3.
- Q. Which is the more practical of the two ways of calculating heat transmission coefficient in wall construction?
 A. See Balsam-Wool Application Data Sheet, Section A, No. 3.
- Q. How does one calculate the amount of insulation needed to prevent condensation moisture on inside surface of walls and roofs?
 A. See Balsam-Wool Application Data Sheet, Section A, No. 7.

HARD-TO-GET FACTS

... now easily available

Balsam-Wool Data Sheets

Quick, easy, authoritative answers to tough insulation application problems—you'll find them in Balsam-Wool Application Data Sheets! These sheets combine the results of laboratory and field research—place hard-to-get facts at your finger tips. Sheets are conveniently assembled in an A.I.A. file folder. Mail the coupon today for your set of Balsam-Wool Data Sheets—they are yours for the asking without obligation.



Balsam-Wool

SEALED INSULATION

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 St. Paul 1, Minnesota

Please send me set of Balsam-Wool Application Data Sheets.

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Hospital Saves on Cost of Heating



Delaware Hospital, Wilmington, Delaware. Heated by 6-zone Webster Moderator System of Steam Heating. Completed in 1942. Unit No. 1, center, occupied in 1940. Architects: Massena & duPont, Wilmington. Consulting Engineers Jaros, Baum & Bolles, New York. General Contractor: Turner Construction Co., Philadelphia. Heating Contractor: Benjamin F. Shaw Co., Wilmington.

When a hospital spends in the neighborhood of \$30,000 annually for fuel oil, that's big business. It calls for a "controllable" steam heating system and careful heating plant operation to effect maximum economies.

The outstanding heating record of the new Delaware Hospital is based on a "Controlled-by-the-Weather" Webster Moderator System of Steam Heating, designed by Jaros, Baum & Bolles, New York Consulting Engineers.

At the time fuel-rationing went into effect it was estimated that 620,000 gallons of fuel oil would be required . . . a fuel rationing board allotted 500,000 gallons for all purposes — heating, sterilizers, laundry, kitchen equipment.

Records show that the Hospital did not require a supplementary ration. This splendid performance was obtained by a combination of a soundly designed Webster Moderator System, a craftsmanlike installation by Heating Contractor Benjamin F. Shaw and skilled operation under Chief Engineer Carl A. Baehr.

Let Webster experience help you in your heating system management problems.

WARREN WEBSTER & CO., Camden, N. J.
Representatives in principal U. S. Cities : Est. 1888
In Canada: Darling Brothers, Limited, Montreal



ARCHITECTURAL ENGINEERING

TECHNICAL NEWS AND RESEARCH

(Continued from page 150)

originated by H. Creston Doner, director of the design department of Libbey-Owens-Ford Glass Company, Toledo, Ohio, as a means of easing eye strain of employees in its own plants. This company does not manufacture the paint, but the color shades have been standardized by spectrophotometer records, available to paint manufacturers.

X-RAY PROTECTION

Scientists at the National Bureau of Standards are now at work to determine the effectiveness of concrete as a protective barrier against million-volt wide-beam x-rays, use of which is increasing in medicine and industry. Industrial uses for million-volt x-ray equipment increased greatly during the war when industrial engineers turned to it as a device for detecting flaws in all types of metal. The Bureau hopes soon to set up standards affording the highest degree of protection at lowest possible cost of installation.

SHOCKPROOF OUTLET

No-Shok receptacle is a twin outlet that prevents foreign objects from being inserted in the receptacle slots. To connect an electrical appliance, the plug is inserted in the slots of a rotary cap on the face of the receptacle, given a quarter turn, and pushed in. When plug is withdrawn, a positive spring action closes the slots. The receptacle is designed to fit all standard outlet covers. Bell Electric Co., 1844 W. 21st St., Chicago 8, Ill.

STONE ENTRANCES

Easy-to-build stone facing for house entrances are offered in twelve different styles, shipped from the quarry and ready for erection at the site. A typical stone entrance "package" consists of some 35 units of stone, each piece cut and numbered, with directions for its assembly by a bricklayer. The special skills of a stone mason are said not to be needed. Conco Building Products, Inc., Mendota, Ill.

MEASURING CURVED LINES

The *Minerva Curvimeter* offers a means of measuring curved lines in the drafting room. When the wheel of the meter is guided along the line to be measured, the length of the line is registered on the dial in three different scales: $\frac{1}{8}$ in., $\frac{1}{4}$ in., and $\frac{1}{2}$ in. to the foot. A small auxiliary hand keeps track of each complete revolution of the main hand which is equivalent to 100 ft. A push button returns the hands to zero. M. Ducommun Co., 580 Fifth Ave., New York 19, N. Y.

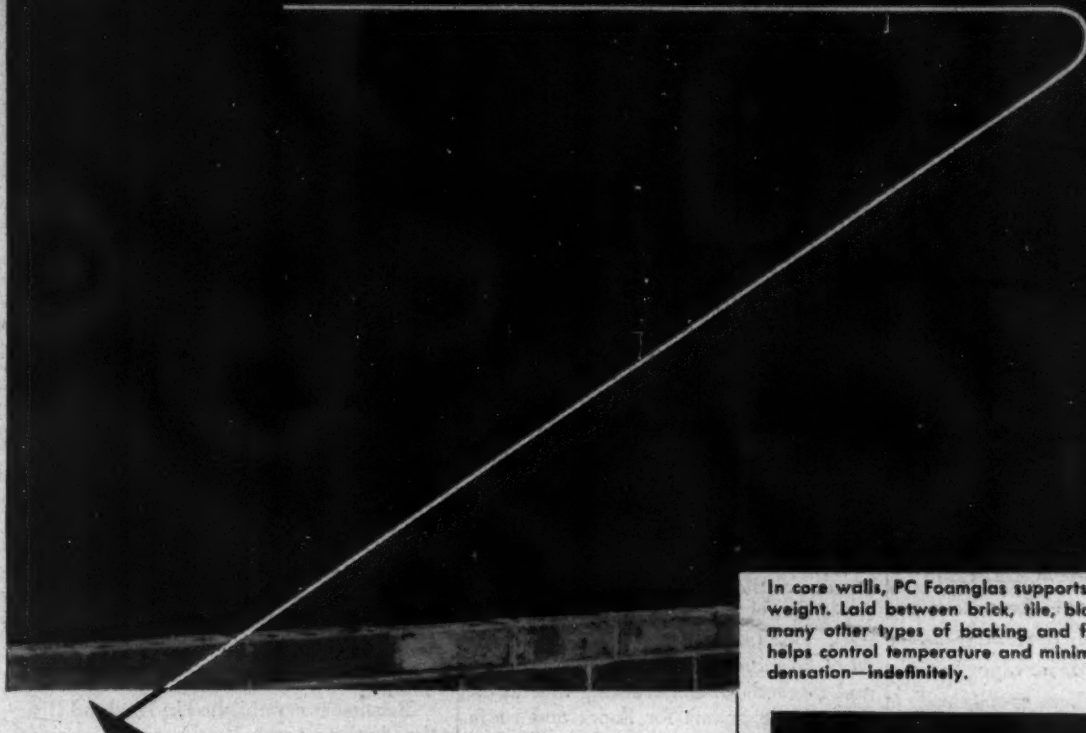
A warm and friendly welcome . . .

a quiet, comfortable, sleep-inviting room . . . right in the heart of downtown Cleveland. Hotel Cleveland adjoins Union Passenger Terminal, garage and Terminal office buildings . . . close to stores, theatres, and convenient to any place you'll want to go in Cleveland.



**HOTEL
CLEVELAND**
Cleveland, Ohio

How Foamglas Insulation is Different AND WHY IT IS BETTER



In core walls, PC Foamglas supports its own weight. Laid between brick, tile, blocks and many other types of backing and facing, it helps control temperature and minimize condensation—*indefinitely*.

PC Foamglas is the only material of its kind. It is not a fiber, not a wool, not a board or a batt. It is literally a foam of glass, solidified into big, light-weight blocks, each composed of millions of minute air-filled glass cells. That is how it is *different* from other insulating materials.

Its unique cellular structure gives Foamglas excellent insulating properties. And since it is glass—and therefore impervious to many elements that usually damage or destroy other insulating materials — PC Foamglas retains its original insulating value *permanently*. That is why it is *better* than other insulating materials.

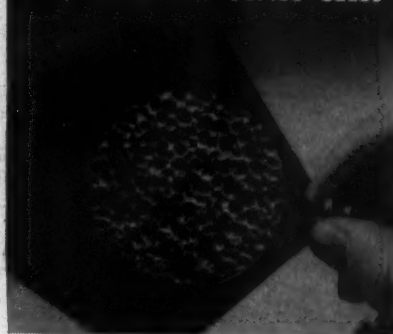
PC Foamglas has proved its ability to help maintain temperature levels, to minimize condensation, in structures of all kinds, without repairs or replacement due to failure of the material. First cost is last cost when you insulate with PC Foamglas — whether walls, floors, roofs or ceilings. When you insulate with Foamglas you insulate for good.

Why not send the coupon for complete information? Pittsburgh Corning Corporation also makes PC Glass Blocks.

WHEN YOU INSULATE WITH FOAMGLAS . . .

YOU INSULATE FOR GOOD!

AIR SEALED IN GLASS CELLS



FOR ADDITIONAL INFORMATION SEE OUR INSERTS IN SWEET'S CATALOGS.

FOAMGLAS INSULATION

Pittsburgh Corning Corporation
Room 475, 632 Duquesne Way
Pittsburgh 22, Pa.

Please send me without obligation, your FREE booklets on the use of PC Foamglas insulation for:

Roofs_____ Walls_____ Floors_____

Name_____

Address_____

City_____ State_____

VAPOR Condensation Lots of Fun on Windows



Lots of Trouble Within Walls

Harmless on windows, moisture condensation plays havoc within walls. Uncontrolled condensation can make insulation soggy and inefficient, cause paint peeling, wall stains — even structure rot. A sure way to prevent these costly evils is with a separate vapor barrier. Architects everywhere specify the standard — Bird Neponset Black Vapor Barrier. Applied on the warm side of insulation, Bird Neponset Black repels vapor, keeps insulation at peak efficiency, ends other condensation evils. Only about \$20 buys life-long protection for a \$10,000 building. See Sweet's Architectural file, 9b-2. For sample, write Bird & Son, inc., 178 Washington St., East Walpole, Mass.



BIRD NEPONSET BLACK VAPOR BARRIER

BIRD & SON, inc., E. WALPOLE, MASS.
CHICAGO NEW YORK SHREVEPORT

ARCHITECTURAL ENGINEERING

TECHNICAL NEWS AND RESEARCH

(Continued from page 120)

tion curves and light measurements, enlarged section on light sources, and a precalculated footcandle table. Includes introductory chapters on the eye and vision, characteristics and measurements of light, light sources, lighting design, and illumination levels. Separate chapters on lighting design in various types of building, on wiring, and on cost. Types of lighting include industrial, commercial, school, street, airport. 206 pp., illus. Lamp Division, Westinghouse Electric Corp., Bloomfield, N. J.* \$2.00.

TILES

Tile Engineering. By Harry C. Plummer and Edwin F. Wanner. A handbook for users of structural clay tile, including facing tile. Describes the shapes and sizes of the tile and its principal properties with respect to color, texture, weight, absorption, porosity, resistance to freezing and thawing, compressive strength, etc. Contains detailed information and recommendations on mortar, the design and properties of structural tile walls, and the design and construction of walls, partitions, footings, foundations, piers and pilasters. Also describes fire-resisting properties and methods of constructing and using precast tile beams for floors and roofs utilized in all-masonry homes and other structures. An appendix contains estimating tables and specifications for various kinds of tile construction. 453 pp. Structural Clay Products Institute, 1756 K St., N.W., Washington 6, D. C.*

LITERATURE REQUESTED

The following individuals and firms request manufacturers' literature:

Harry L. Alper, Architect, 565 Fifth Ave., Suite 1011, New York City.

Joseph M. Barrow, Architect, 713 W. Illinois St., Urbana, Ill.

Fugard, Olsen, Urbain & Neiler, 19 S. LaSalle St., Chicago 2, Ill.

Lloyd B. Knutsen, Architect, 527 Hoeschler Bldg., LaCrosse, Wis.

Architectural Division, Long Island State Park Commission, Belmont Lake State Park, Babylon, L. I., N. Y.

William J. Moore and Associates, Engineers, 18609 St. Clair Ave., Cleveland, Ohio.

Roy M. Schoenbrod, Architect and Engineer, 8 S. Dearborn St., Chicago 3, Ill.

Noah N. Sherman, Architect, 62 William St., New York City.

(In July issue, Dillard P. Spangler, architectural designer draftsman, was incorrectly listed as an architect.)

Announcing

IN A NEW, REVISED,
1947 EDITION . . .

THE MODERN HOUSE

by F. R. S. YORKE, A.R.I.B.A.

• This home building classic, with its collection of the finest examples of modern residential architecture, from the United States, England and Continental Europe, has undergone an up-to-the-minute revision.

For Architects, Students,
Home Builders

Although illustrated with hundreds of fine photographs, this book is no mere collection of startling pictures. Materials and construction methods are analyzed for each house, and preliminary chapters discuss walls, windows, roofs and planning in relation to twentieth century homes.

Because it is published in England (by the Architectural Press) under severe manufacturing difficulties, only a limited number of copies of THE MODERN HOUSE will be available for some time to come. To get your copy, order it now from ARCHITECTURAL RECORD, sole distributor, using the coupon below.

Price: \$6.50



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MODERN HOUSE for which I enclose
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In October...

BRASCO will reveal an entirely new metal store front setting, complete, fully integrated and specifically designed to meet the architectural demands of tomorrow's enlarged, full-visibility fronts.

Features of the new line will include...

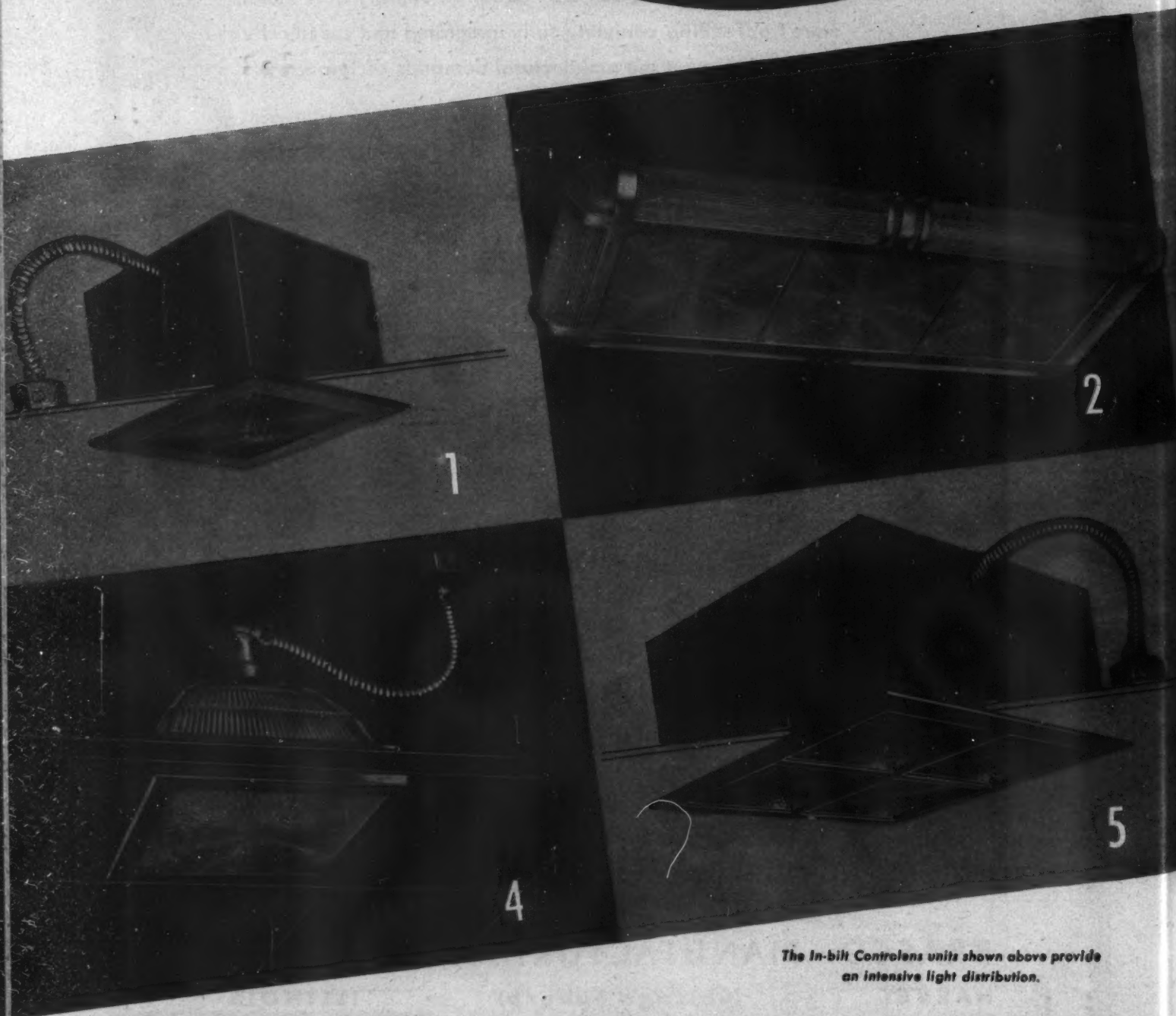
- ★ Five glass-holding sash—one rolled in heavier gauge than hitherto available.
- ★ Fingertip setting—a unique principle (patent applied for) which entirely eliminates glass-setting screws.
- ★ Greatest visibility—larger glass areas incorporating Brasco's deeper grip.
- ★ Outstanding rolled members in stainless steel or anodized aluminum, for every structural requirement—diversified to permit individuality and full personal expression.
- ★ Heavy-duty bars, substantially reinforced—essential for heightened glass areas.

With Brasco's present line, the new construction will round out the most comprehensive selection of rolled members available for modern store front design.



BRASCO MANUFACTURING COMPANY
HARVEY • (Chicago Suburb) • ILLINOIS

IN-BILT



The In-bilt Controlens units shown above provide an intensive light distribution.

1 Single flush unit. Square-lens-square-reflector (basic optics for all except #6.) 12" or 8 1/2" square lenses contained in metal housing for any building construction.

4 For acoustical tile ceilings. Modification of #3. Flush units, single or multiple types. 11" square lens.

2 Decorative drop-trim units. Single and multiple types. Ceiling illumination through ribbed glass side panels. 12" lenses. May be alternately equipped for accent lighting.

5 Multiple flush units (four-square as above and 2 or more in-line). Lenses and reflectors are 12" square. In metal housing.

3 No-Box type, modification of #1. Single flush units. Square-lens-square-reflector with 12" or 8 1/2" square lenses. Affords substantial savings in fire-resistant buildings.

6 Flush unit No-Box type. Round-reflector-round-lens, 13 1/2" diameter. Employ where round shape is architecturally indicated.

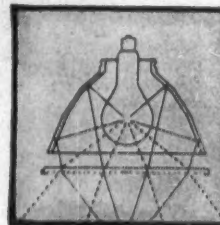
PRODUCTS OF HOLOPHANE RESEARCH



This matched "Optical-Train" meets over 85% of today's IN-BILT lighting requirements

For general lighting applications, where it is desirable to secure uniform illumination from regular grid spacings up to $1\frac{1}{4}$ times the mounting height, Holophane offers the exclusive double-action Controlenses. On superficial examination they may resemble other lens types, however their performance for general lighting purposes is far superior.

Observe from the sketch their ability to accept light rays, at the same point on the lens, that approach from equally opposite directions, and then to diverge them in an equally opposite amount.



The ultimate refinement resides in the matching of forms: square prismatic reflectors with square prismatic lenses; round reflectors with round lenses. This results in uniform brightness over the entire surface of the lighted unit.

Consider these cumulative advantages from the use of Holophane IN-BILT Controlens Systems: A. highest illumination values from any built-in system . . . B. crystal prismatic glass transmits the light unmodified and undistorted . . . C. glass control surfaces impervious to chemical change; ordinary washing solutions restore them to initial efficiency . . . D. low cost per-footcandle-per-year because of better maintenance due to enclosed construction . . . E. artificial lighting in the natural manner; this method comes nearest to letting in the sky . . . F. last word in the art of lighting; interiors appear clean, orderly, spacious.

Consult Holophane Engineering Service



The family of Holophane In-Bilt Controlens units is more extensive than space permits us to show and describe here. Actually, the combination of optical arrangements and lighting effects which can be secured with prismatic Controlens systems

are nearly inexhaustible . . . Engineering data is available from which you can design the average job. If your lighting project requires a technique which is not readily apparent, the services of our Engineering Department are at your disposal.

HOLOPHANE COMPANY, INC.

Lighting Authorities Since 1898 • 342 MADISON AVENUE, NEW YORK 17, N. Y.

THE HOLOPHANE COMPANY, LTD., THE QUEENSWAY, TORONTO 14, ONTARIO

FLEXSTONE BUILT-UP ROOFS

...guard against flying brands



**Each ply is a flexible covering
of stone—made of asbestos**



Make this Fire Test! The ordinary roofing felt, on the left side, was reduced to ashes by the consuming flame. But the J-M Asbestos Felt, on the right, remained unharmed . . . proving its fire resistance. We'll gladly send you the materials to make this convincing test yourself.

Protect your building from the hazard of flying sparks and burning embers. Insist on a Johns-Manville Flexstone Roof. *It will not support combustion.* That's because the felts in a J-M Flexstone Built-Up Roof are made of the magic mineral *asbestos*—fireproof, rotproof, long-lasting.

Flexstone Roofs are *smooth-surfaced*, too—permitting thorough drainage, eliminating the weight of slag or gravel, and making any damage easy to locate and repair. Need no periodic coating. Felts are perforated to insure smooth application.

All Flexstone Roofs are engineered to the particular requirements of your building—whether it's new construction or re-roofing. To insure skilled application, they are applied only by J-M Approved Roofers.

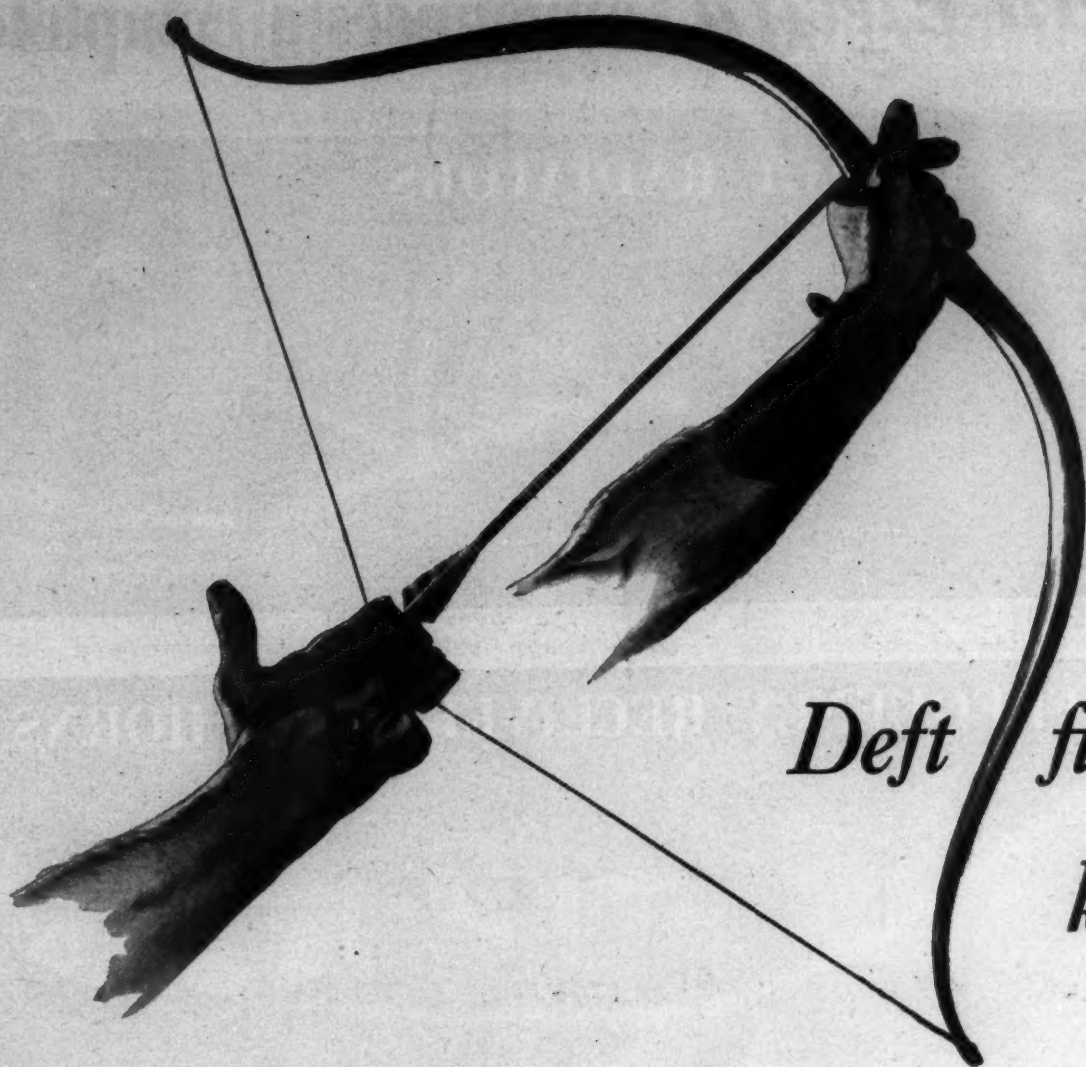
Three types available: Flexstone Super "A," Standard, and Service—each the finest that can be specified for its purpose. Write for brochure BU-51A, containing complete specifications. Johns-Manville, Box 290, N. Y. 16, N. Y.

Because of unprecedented demand, there may be times when we cannot make immediate delivery. Please anticipate your needs.



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FLEXSTONE BUILT-UP ROOFS



*Deft fingers
know!*

A skilled archer responds to the smooth, speedy cast of a fine yew bow. So does the professional draftsman respond to the smooth, easy performance of TYPHONITE ELDORADO leads. You'll learn the joy of a job well done with

DIXON'S TYPHONITE

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PENCIL SALES DEPT. 225-J9, JOSEPH DIXON CRUCIBLE CO., JERSEY CITY 3, N. J.

Western Electric announces a complete

DIRECT RADIATORS



728B—12" direct radiator.



756A—10" direct radiator.



755A—8" direct radiator.



754A—12" direct radiator.
754B (not shown) 12" direct
radiator for outdoor use.

HIGH FREQUENCY RECEIVERS AND HORNS



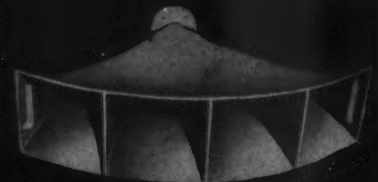
713B & C—High frequency
receivers



KS-12024—Sectoral high frequency
horn. 50° coverage angle.



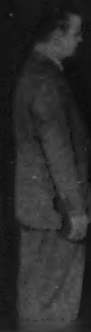
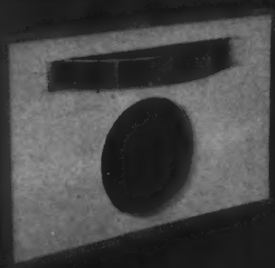
KS-12027—Sectoral high fre-
quency horn 90° coverage angle.



KS-12025—Sectoral high frequency
horn. 80° coverage angle.

COMBINATIONS . . .

757A—dual unit
system.



HIGH LEVEL SYSTEMS
for indoor and outdoor use.



— QUALITY COUNTS —

line of High Quality, wide range loudspeakers

- 1 Sizes and combinations to meet every sound radiation problem . . .
- 2 Power capacities from 8 to 120 watts . . .
- 3 Frequency ranges as wide as 60-15,000 cycles . . .
- 4 All units designed by Bell Telephone Laboratories . . .

IT'S a thrilling, satisfying experience to listen to reproduced sound that is truly *high quality*. The new line of wide range Western Electric loudspeakers was designed to make that experience available to all . . . to provide a complete line of loudspeakers with the ability to reproduce sound of unmatched brilliance and tone.

Whatever your loudspeaker needs, there's a Western Electric loudspeaker to meet them . . . to provide you with sound that's based on a whole new concept of high quality reproduction. Examine the following table to see how your requirements are met, or mail the coupon below for literature describing this new line of equipment.

HERE'S HOW YOUR QUALITY REQUIREMENTS ARE MET

TYPE	POWER HANDLING CAPACITY	FREQUENCY RESPONSE (cycles)	INPUT IMPEDANCE	COVERAGE ANGLE	EFFICIENCY (Sound Level of 30' on Axis)	WEIGHT	SPEAKER DIMENSIONS	ENCLOSURE REQUIRED	RECOMMENDED CABINET DIMENSIONS (Slipping front)
755A 8" direct radiator	8 watts	70-12,000	4 ohms	70°	81.5 db above 10 ⁻¹² watts per sq. cm. at 8 watts input	Speaker—4½ lbs.	Dia.—8½" Depth—3½" Baffle Hole Dia.—7"	2 cu. ft.	Width—16" Height—21" Top Depth—9½" Bottom Depth—13"
756A 10" direct radiator	30 watts	65-10,000	4 ohms	60°	89.5 db above 10 ⁻¹² watts per sq. cm. at 30 watts input	Speaker—10 lbs.	Dia.—10½" Depth—3½" Baffle Hole Dia.—8½"/16"	2½ cu. ft.	Width—19" Height—23" Top Depth—8½" Bottom Depth—11½"/16"
728B 12" direct radiator	30 watts	60-10,000	4 ohms	30°	93.5 db above 10 ⁻¹² watts per sq. cm. at 30 watts input	Speaker—17 lbs.	Dia.—12½"/32" Depth—3½" Baffle Hole Dia.—11"	3 cu. ft.	Width—31" Height—23½" Top Depth—9½" Bottom Depth—12½"
754A 12" direct radiator	15 watts	60-10,000	4 ohms	30°	94 db above 10 ⁻¹² watts per sq. cm. at 15 watts input	Speaker—17 lbs.	Dia.—12½"/32" Depth—3½" Baffle Hole Dia.—11"	3 cu. ft.	—
754B 12" direct radiator (outdoor type)	50 watts	60-10,000	4 ohms	30°	94 db above 10 ⁻¹² watts per sq. cm. at 50 watts input	Speaker—17 lbs.	Dia.—12½"/32" Depth—3½" Baffle Hole Dia.—11"	2½ cu. ft.	—
757A 2 unit system	30 watts	60-15,000	4 ohms	90°	93 db above 10 ⁻¹² watts per sq. cm. at 30 watts input	62 lbs. including cabinet	Composed of 1-728B low frequency unit and 1-713C high frequency receiver with KS-12027 horn	Enclosure furnished with system	Width—30½" Height—30" Top Depth—15½" Bottom Depth—13½"
713B high frequency receiver	25 watts	With horns KS-12024-5-7 800-10,000	4 ohms	(See specifications for horns)	With KS-12024—100 db KS-12025—98 db KS-12027—97 db	8 lbs.	Dia.—4½"/13" Depth—4½"	—	—
713C high frequency receiver	25 watts	With horns KS-12024-5-7 800-15,000	4 ohms	(See specifications for horns)	With KS-12024—97 db KS-12025—95 db KS-12027—94 db	8 lbs.	Dia.—4½"/13" Depth—4½"	—	—
KS-12027 high frequency horn	—	With 713C Receiver 800-15,000	—	90° horizontal 90° vertical	—	10 lbs.	Length—13½" Width—19½"/16" Height—2½"/16"	—	—
KS-12024 high frequency horn	—	With 713C Receiver 800-15,000	—	60° horizontal 40° vertical	—	7 lbs.	Length—16½" Width—12½"/16" Height—6½"	—	—
KS-12025 high frequency horn	—	With 713C Receiver 800-15,000	—	60° horizontal 40° vertical	—	12 lbs.	Length—19" Width—23½"/32" Height—6½"	—	—
High Level Speaker Systems (For indoor or outdoor use)	Range from 30 to 120 watts in single units	60-10,000	Depends on Components	Range from 30° to 100°	Depends on Components	Range from 140—380 lbs.	Systems composed of 754A or 754B low frequency units, 713B high frequency receivers, and KS-12024 or KS-12025 horns	Enclosures furnished with systems, include low frequency horns	Range from 80" x 35" x 48" to 78" x 33" x 48"

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Gentlemen: Please send me literature describing the new line of Western Electric loudspeakers.

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In some of the finest college and university buildings . . . as well as modern grade and high schools all over the country . . . Herman Nelson Heating and Ventilating Products are maintaining comfortable and healthy air conditions.

Because the average man spends about 80 per cent of his entire life-time indoors, it is important that all buildings in which he goes to school, works and plays be properly heated and ventilated.

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Complete technical data on Federal Standard Cold Cathode lighting fixtures and lamps is now available to engineers, architects, designers—everyone planning improved lighting.

Federal Electric Company is the first in the industry to provide complete factual data for installation and performance of Standard Cold Cathode lighting units. This data has been published in convenient folder form to assist you in computing lighting installations. The data covers Federal's complete fixture line.

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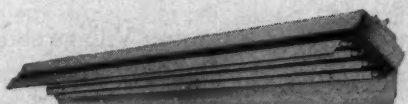
FIRST to design completely modern functional fixture units (25 types available).

FIRST to develop automatic lamp processing equipment for manufacture of reliable Cold Cathode lamps.

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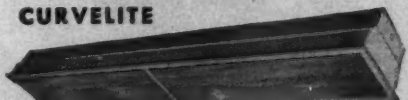
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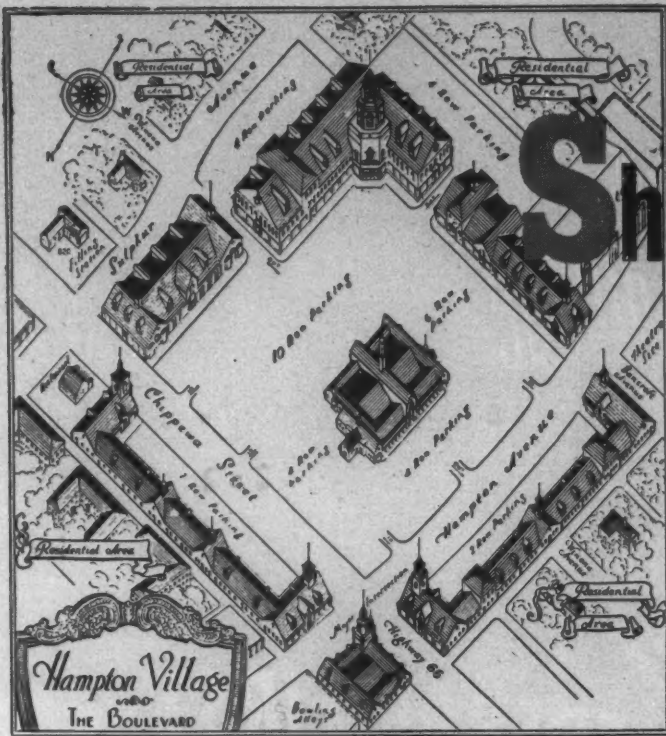
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Shoppers' paradise will be

From snack bar to florist shop,
Hampton Village's stores will
be equipped with **Servel All-
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Smartly styled snack bar and cocktail lounge. Servel Air Conditioner keeps customers cool in summer, warm in winter, and clean and comfortable all year 'round . . . helps boost patronage, too.



Modern-designed florist shop. Servel Air Conditioner pays big dividends by keeping flowers fresh and attractive—winter and summer.

HAMPTON VILLAGE—located in the midst of one of St. Louis' most fashionable urban and suburban areas—is not only one of the largest drive-in shopping centers in America, but it's the *only* one that will be completely air conditioned. This \$11,000,000 project covers an area equal to 14 city blocks...and will include 110 retail stores.

What's more, every Hampton Village shopper, salesman, and worker will enjoy the comforts and health-giving benefits of Servel All-Year Gas Air Conditioning.



Individual Servel Air Conditioners are installed in each store... and controlled by the tenant. Here's a typical basement installation.

Servel, Inc. is a member of the Producers' Council, and is engineering its products to conform with accepted practices in modular planning.

in St. Louis All-Year Air Conditioned



Each of the 22 stores now completed has its own self-contained Servel unit. Each tenant has complete control over the temperature in his store by simply using the Servel Selectrol. In summer, Servel circulates air that's refreshingly cool and free from humidity. In winter, the same unit provides comfortable, properly humidified warmth. All year long, Servel keeps the air clean and draft-free.

It's easy to see why Hampton Village chose Servel in preference to other kinds of air condi-

tioning equipment. No other type provides the simplicity of control and flexibility of service. This is especially important in a super shopping center, where the air conditioning must satisfy the practical and comfort requirements of several different kinds of retail businesses.

For complete information on *all* the advantages and conveniences of Servel All-Year Gas Air Conditioning, see your local Gas Company ... or write to Servel, Inc., 8709 Morton Avenue, Evansville 20, Indiana.

TRIED ... PROVED ... SUCCESSFUL

(From Boston to San Diego ... From Bismarck to Miami)

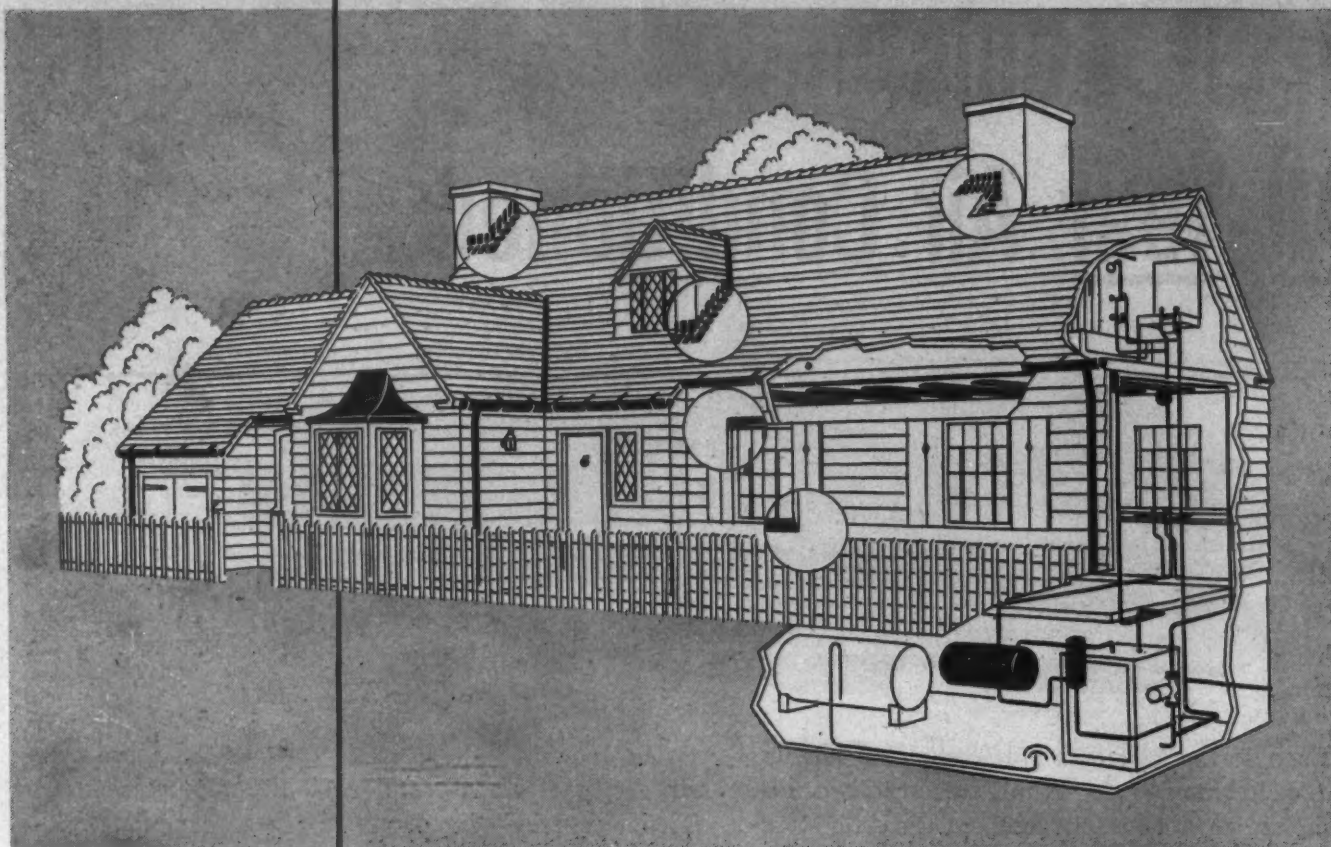
The Servel All-Year Gas Air Conditioner is already operating successfully in hundreds of installations from coast to coast. Some have been running for more than seven years. The equipment is tried, tested ... and *approved* by users everywhere.

Servel

All-Year GAS AIR CONDITIONER



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TROUBLE always costs more than REVERE COPPER

FROM the start of your plans throughout the life of the house, Revere Copper and Brass Incorporated works with you to insure your client's lasting satisfaction.

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It is because of this all-around cooperation—in addition to the consistently fine quality of Revere copper and brass building products—that *trouble always costs more than Revere Copper.*

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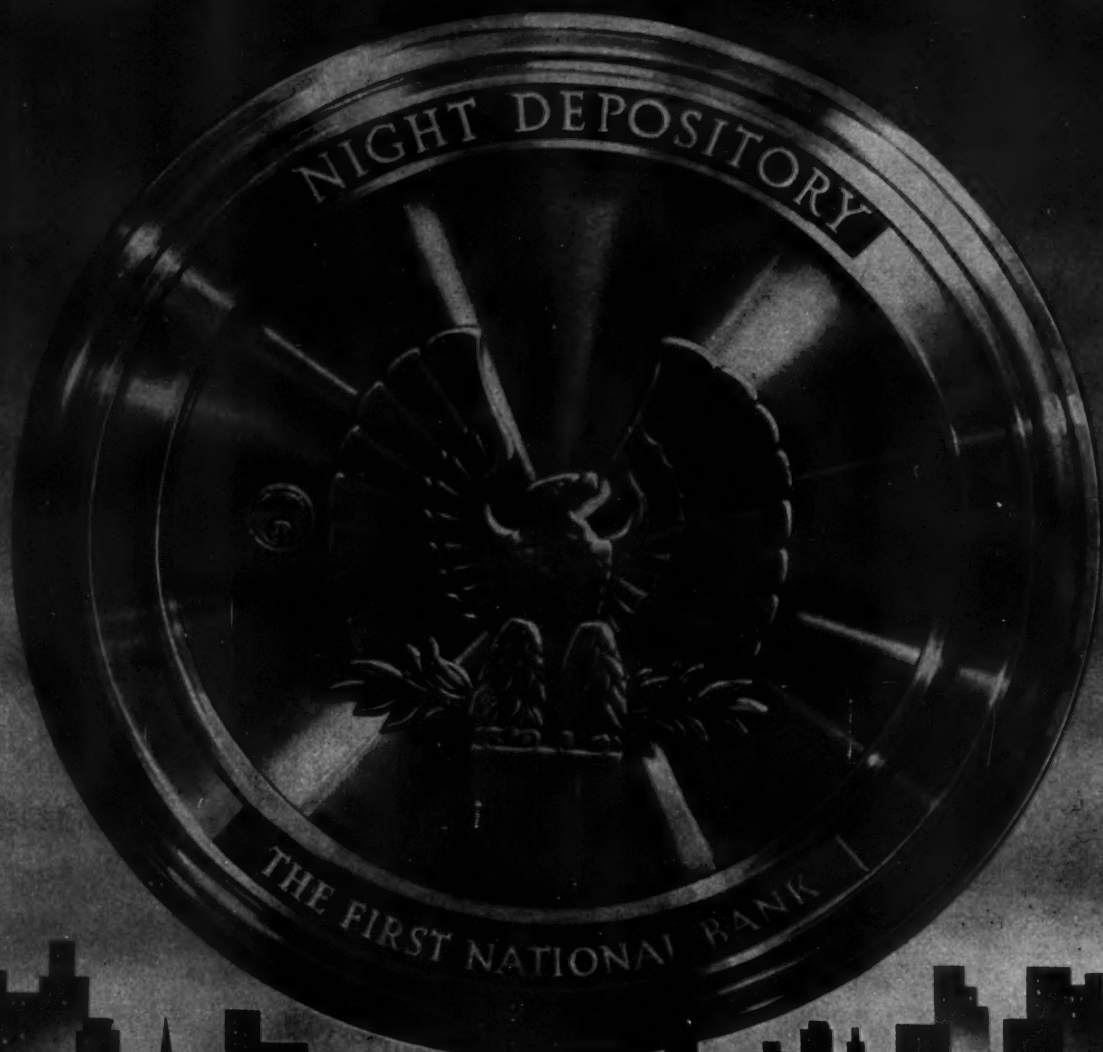
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Only a limited number will be available for delivery in 1948. Investigate now! For complete information, write to the Westinghouse Electric Corporation, Elevator Division, 150 Pacific Avenue, Jersey City 4, N. J. on your letterhead please.

★ *Engineering information available to architects*

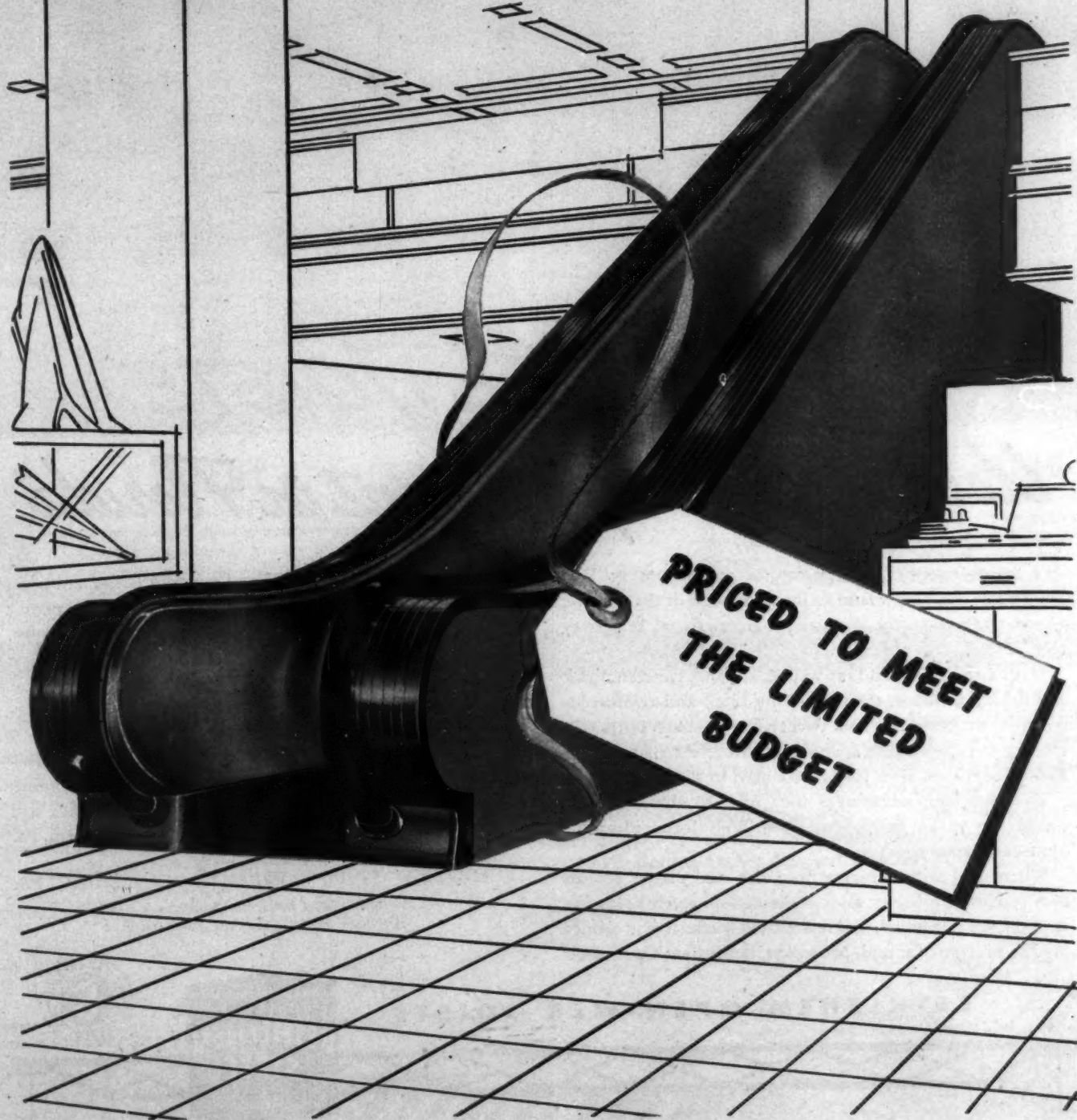
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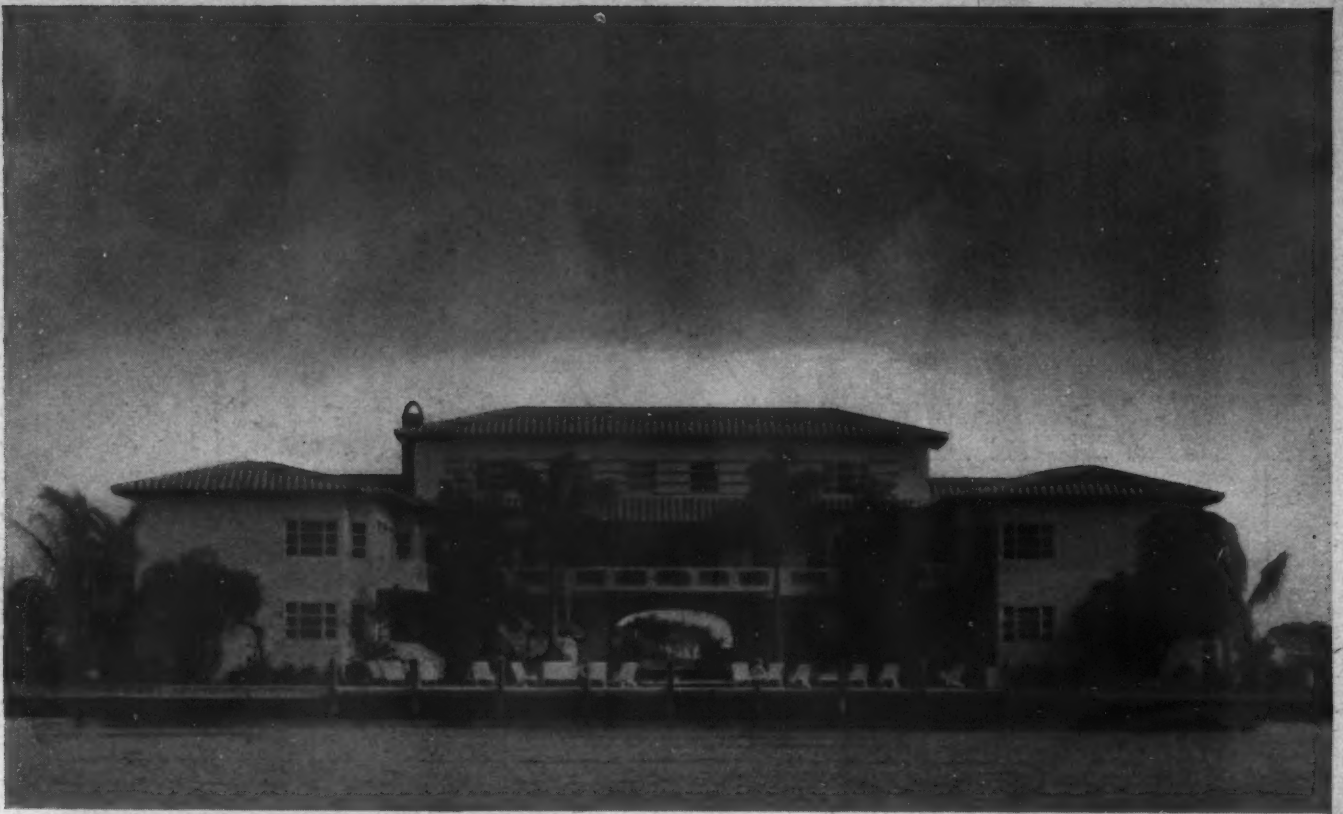
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IT'S HERE!

STAIRWAY





Casa Glamaretta Apartments, Fort Lauderdale, Fla. Architects: Grunkemeyer & Sullivan and Associates, Cincinnati. Associate: Upton C. Ewing, Miami, Fla.
General Contractor: Universal Construction Co., William Schantz, President, Fort Lauderdale, Fla.

OPEN-WEB JOISTS

Used in New Apartment in Florida

The breeze-swept Casa Glamaretta apartments at Fort Lauderdale, Fla., command an inspiring view of the Atlantic Ocean to the east, the picturesque Intra-coastal Waterway to the west.

With a spacious patio, as well as an 80-ft concrete dock and fishing facilities, the three-story brick-and-reinforced-concrete structure contains twenty-five separate suites, including two penthouse apartments. More than 70 tons of Bethlehem Open-Web Joists were used in its construction.

The important advantages they offer to architects and contractors make Bethlehem Open-Web Joists ideal for light-occupancy structures.

When used with concrete floor slab and plaster ceiling they provide a low-cost floor construction which holds fire in check for two hours, and in addition is effective in reducing the passage of sound. Moreover, Bethlehem Open-Web

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They come plainly marked, ready for installation. Two men can handle the Bethlehem standard-type joist, and merely a light-weight gin pole is needed to put the Long-span type of joist into place.

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**Modine gives you BOTH of these
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1

RADIANT HEATING

Notice those arrows? That's radiant heat . . . mild radiant heat coming from that Modine Convactor Panel in just enough quantity to offset heat loss from window areas. But we don't stop with just *radiant* heating. To it we add—

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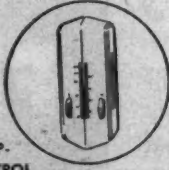
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Convection heating. The hot water or steam circulates through the copper heating unit, draws the cooler, floor-line air into the bottom of the convactor where it's warmed, rises, and is then gently circulated throughout the room.

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EASY TO
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ADDS TO
LIVING SPACE



PRICED
FOR TODAY'S
HOMES AND
APARTMENTS

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CONVECTOR RADIATION

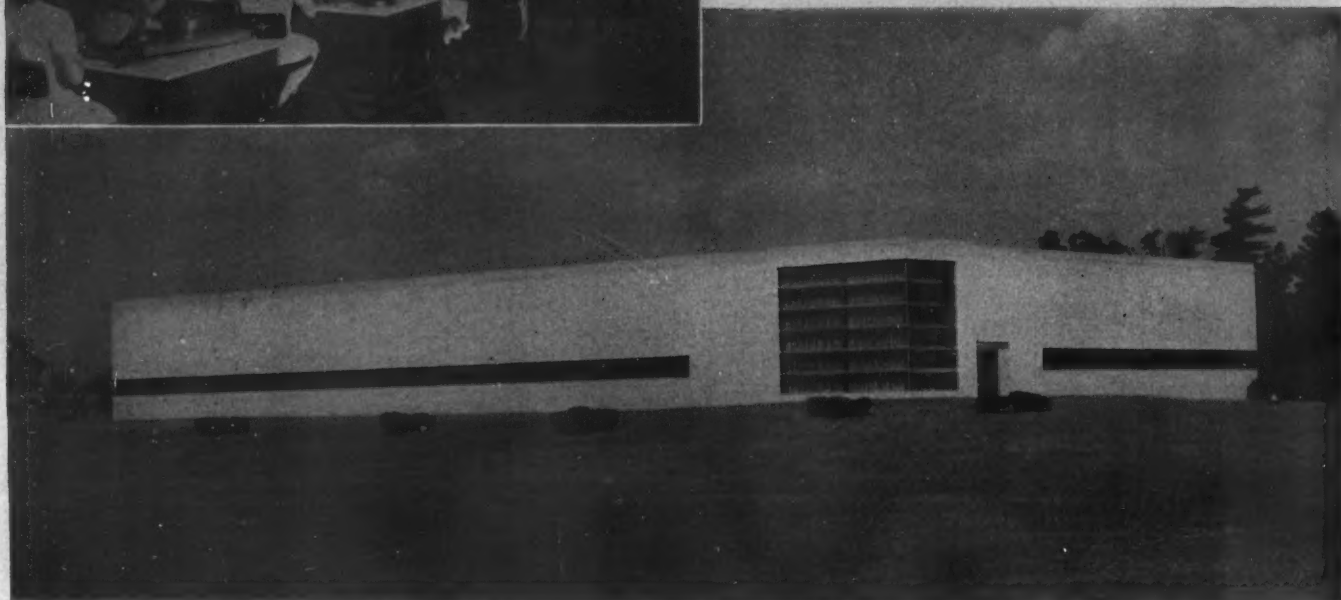
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Scene in suture winding room where conditioned air and controlled humidity are necessary safeguards. Blocker Air Conditioning Corp., Newark, N. J., installed the system.

General view of Ethicon Suture Laboratories, designed by architects R. G. and W. M. Cory, New York. Rogers & Gons, New Brunswick, N. J., were builders.



PERFECT SETTING FOR SUTURES...

**Comfort Cooling—Controlled Humidity—
Hospital Cleanliness... with Maximum Safety
Assured by "Freon" Refrigerants**

In the ultra-modern Ethicon Suture Laboratories—a division of the surgical dressing house of Johnson & Johnson, New Brunswick, N. J.—cleanliness rivals that maintained in the world's largest and finest hospitals. The laboratories are immaculate throughout and perfectly air conditioned with equipment utilizing "Freon" safe refrigerants exclusively.

In a "winding room," catgut sutures are wound on small paper reels. Temperature and humidity are of the utmost importance because catgut stretches when there is an excess of moisture... becomes brittle if conditions are too dry. So temperature is held constant at 75°F.; relative humidity at 45% the year round.

In the sealing room (a sterile area where the sutures are packed in hermetically sealed glass tubes), conditioned air is a comfort necessity, for

the sealing operation is done with the aid of confined flame in automatic glass-blowers.

Plant equipment providing both the conditioned air and perfectly controlled humidity consists of a 75 h. p. York refrigerating machine and a 5 h. p. Copeland compressor. Both units are located in a convenient motor room in the basement of the building. Both use "Freon"... recommended because the dryness, purity and uniformity of these well-known refrigerants assure maximum safety, economy, and efficiency of operation.

When plans call for modern air conditioning, humidity control or refrigerating systems... recommend or specify equipment designed to utilize "Freon" safe refrigerants. Kinetic Chemicals, Inc., Tenth and Market Sts., Wilmington 98, Del.



Sealing room operators keep comfortable despite heat from glass-blowers used in their work.



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For Concrete, Stucco, and Masonry
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27 years of successful use prove its quality

● Down through the years, leading architects have specified Medusa Portland Cement Paint for all concrete, stucco, and masonry surfaces. They know that Medusa Paint gives the results they want—long lasting beauty, permanent colors, and complete weather sealing. Time—27 years—has proved that the architects are right. Medusa Paint *is* best. It is the easy way to assure long lasting beauty and weather sealing at lowest cost.

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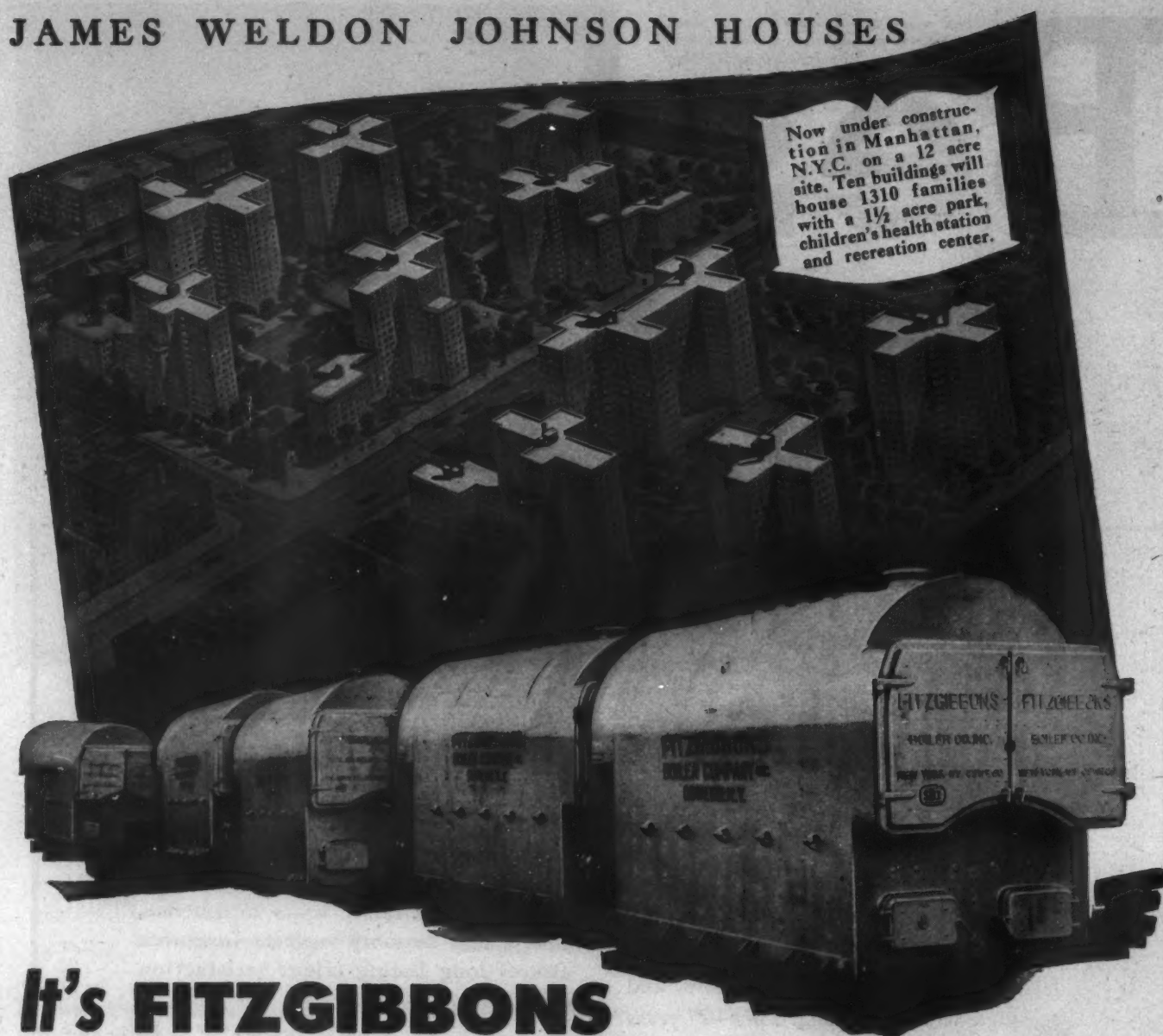


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Now under construction in Manhattan, N.Y.C. on a 12 acre site. Ten buildings will house 1310 families with a 1½ acre park, children's health station and recreation center.

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Architects: Julian Whittlesey, Harry M. Prince and Robert J. Reiley. General Contractor: Wilaka Construction Co. Consulting Engineer: Alexander D. Crosett. Heating Contractor: Heating Maintenance Corp. Photo courtesy of New York City Housing Authority.

... And therefore it's *assured* comfort and *assured* operating economy and long life. Mighty good reasons for the installation of these five Fitzgibbons "D" Type steel boilers with a combined capacity of 212,500 sq ft S.B.I. rating, in this new construction—one of a number of outstanding Fitzgibbons installations in New York City Housing Projects.

Fitzgibbons "D" Type steel boilers, with their heritage of fine construction and proven design, are increasingly the choice for large building projects. Strict compliance with A.S.M.E. Codes, Hartford Inspection and Steel Boiler Institute requirements mark one important reason why. You'll be interested in the many other important reasons. Ask us.



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to write on, walk on, smear beautiful Stainproof VARLAR

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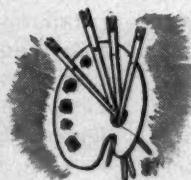


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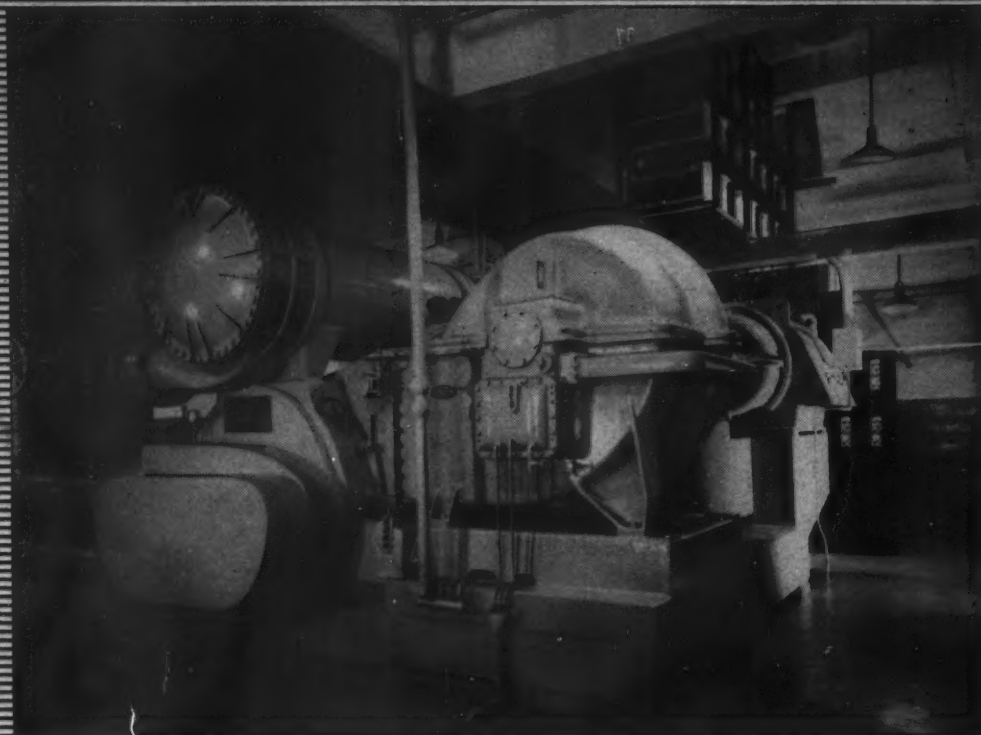
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refrigeration that looks ahead

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Carrier

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VISIBILITY OF THE ENTIRE SHOWROOM is made easy by large plate glass windows on front and side. The showroom is flooded with daylight—and at night exhibits the autos in a brilliantly-lighted, giant showcase.

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... FOR BEAUTY
... FOR PRACTICALITY

WITH *Glass*

Count on glass to provide the benefits your clients want in new storefronts. Beauty that catches attention ... impressive display of merchandise day and night ... and the practical matter of easy maintenance.

This dealer showroom in Salt Lake City takes advantage of the many benefits of glass. Transparency for visibility and light transmission. A hard, gleaming, weatherproof surface that always looks new and that doesn't need refinishing.

A Visual Front lets people *see in*. This principle of displaying the entire store to potential customers is being applied to stores of many types. Our colorful Visual Fronts book includes many ideas that you'll find helpful in your storefront planning. Write for it. Libbey-Owens-Ford Glass Company, 6597 Nicholas Building, Toledo 3, Ohio.

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a Great Name in **GLASS**



THE BEAUTY OF GLASS is an important element in building design. Here, lustrous black *Vitrolite** glass facing over the solid area "dresses up" the front. *Vitrolite* is available in a range of colors. They permit wide latitude in decorative effects. *Tuf-flex** tempered plate glass doors enhance the beauty of the front.



A FEELING OF SPACIOUSNESS is achieved in the showroom, and the display appears to be doubled by the use of plate glass mirrors on the end wall. In addition, *Vitrolite* is used here for attractive facing on the counter. Note the recessed ceiling lighting through panels of Reglex patterned glass.

Architect: Young and Hansen, Salt Lake City.

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At the vital point of air delivery you measure the real efficiency of an air conditioning system. And, of course, the selection of air distribution equipment largely determines performance.

Take our improved Aerofuse Multi-Louvre Damper, for example. Balanced system assured by minute adjustment of air volume . . . convenient to regulate. Multi-Louvre

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and with minimum turbulence in air stream,

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assures complete shut-off. Tamperproof,

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These are *exclusive* T & B designed-in features. As a result, when you specify Aerofuse ceiling diffusers—equipped with the Damper—for installation at the distribution end of air conditioning systems, you can be *sure* of effective, efficient control...the proper amount of supply air, delivered as you want it, where you want it, evenly distributed and without drafts.

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Rush me complete information on the Aerofuse Damper.

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COMPANY _____			
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in this development"*



**...a wise specification—TODD Burners
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For more than thirty years, Todd has led the field in the development of combustion equipment with maximum power capacity coupled with min-

imum fuel consumption. There is an economy-proved line of Todd Oil or Gas Burners, fully automatic, semi-automatic, or manually controlled, to fit all requirements, regardless of the type of building or the power set-up. In addition, special equipment can be tailored to meet your exact specifications.

Before selecting burners for your new or remodeled buildings consult Todd Engineers. They will cooperate with you in every way in meeting the individual needs of your clients' power plants.

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It's a fact! Toncan Iron possesses *the highest rust-resistance of all ferrous materials in its price class*. That's why any sheet metal installation costs less in the end—if it's made with long-lasting Toncan Iron.

Made from highly refined open-hearth iron, Toncan Iron contains copper—twice as much as copper-bearing steel or iron—*plus* molybdenum; which increases the effectiveness of the copper. Hence, its rust-resistance is uniform throughout the metal—is unaffected in any way by bending, shearing, punching, corrugating, riveting and other cold working.

For nearly 40 years, Toncan Iron has been a recognized leader in its field—providing low-cost, unfailing rust protection in every type of sheet metal product. And it's easy to work and weld. To get the complete story about this versatile iron, write today to:

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Radiant Heating Coils resting on Zonolite Insulating Concrete

Another new development for builders—FLOORS THAT INSULATE! By using Zonolite Insulating Concrete for grade level floors in commercial structures or homes, cold and dampness can be eliminated. Heat loss into ground will be avoided.

Zonolite Insulating Concrete floors are made by mixing a specially graded Zonolite brand of vermiculite with Portland cement. This insulating concrete can be placed directly on the ground (vapor seal often placed on ground first) forming a fireproof, rot proof, termite proof, vermin proof floor base.

When radiant heating is specified, these floors are particularly desirable as a base for the coils or ducts. After laying the coils on this highly efficient and permanent base, they should then be covered with ordinary concrete. Heat waste into the ground is greatly reduced and enables the room to heat faster.

Whenever a floor is constructed on grade level, regardless of whether or not it has radiant heat, Zonolite Insulating Concrete should be specified. Because of the low heat capacity of Zonolite Insulating Concrete, condensation on the floor surface on warm, humid summer days is avoided.



Covering coils with a topping of ordinary concrete

ZONOLITE CONCRETE FLOORS REDUCE DEAD LOAD IN HIGH BUILDINGS

Zonolite Insulating Concrete, when used as a fill over steel pan floors, reduces dead load. When used in this way, the fireproofness of the building is greatly increased as Zonolite is one of the most fireproof materials known. Zonolite Concrete aggregate weighs as little as six pounds per cubic foot.

Send now for complete information about Zonolite Concrete Floors.



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INSULATION CO.
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Chicago 3, Ill.

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FOR DETAILS

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Universal Zonolite Insulation Co.
Dept. AR-97, 135 S. La Salle St., Chicago 3, Ill.
Please send complete details on Zonolite Insulating Concrete Floors.

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Address.....

City.....Zone.....State.....

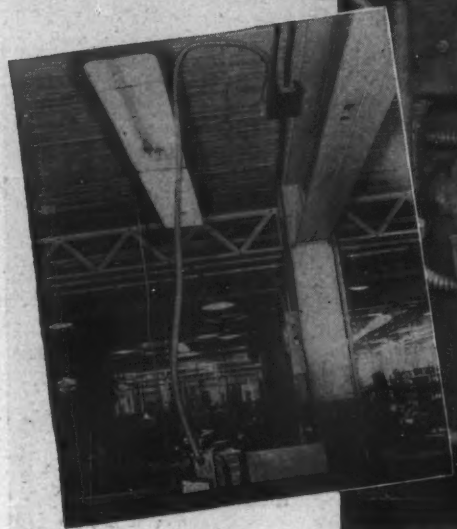
Please check: ☐ Architect ☐ Engineer ☐ Draftsman ☐ Contractor

*Zonolite is the registered trade mark of Universal Zonolite Insulation Co.



FLEXIBLE CONDUIT

for
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Fast construction demands conduit that's made for speed. And, for real speed, you'll find General Electric flexible conduit hard to beat. It's made to simplify and expedite construction work where time is a factor — where protection and flexibility are essential. For construction speed, specify General Electric flexible conduit.

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Wiring machine tools, shop equipment, signs

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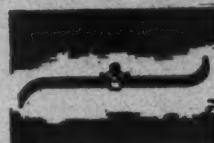
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For Lasting Protection to Wiring, remember the two General Electric lines of

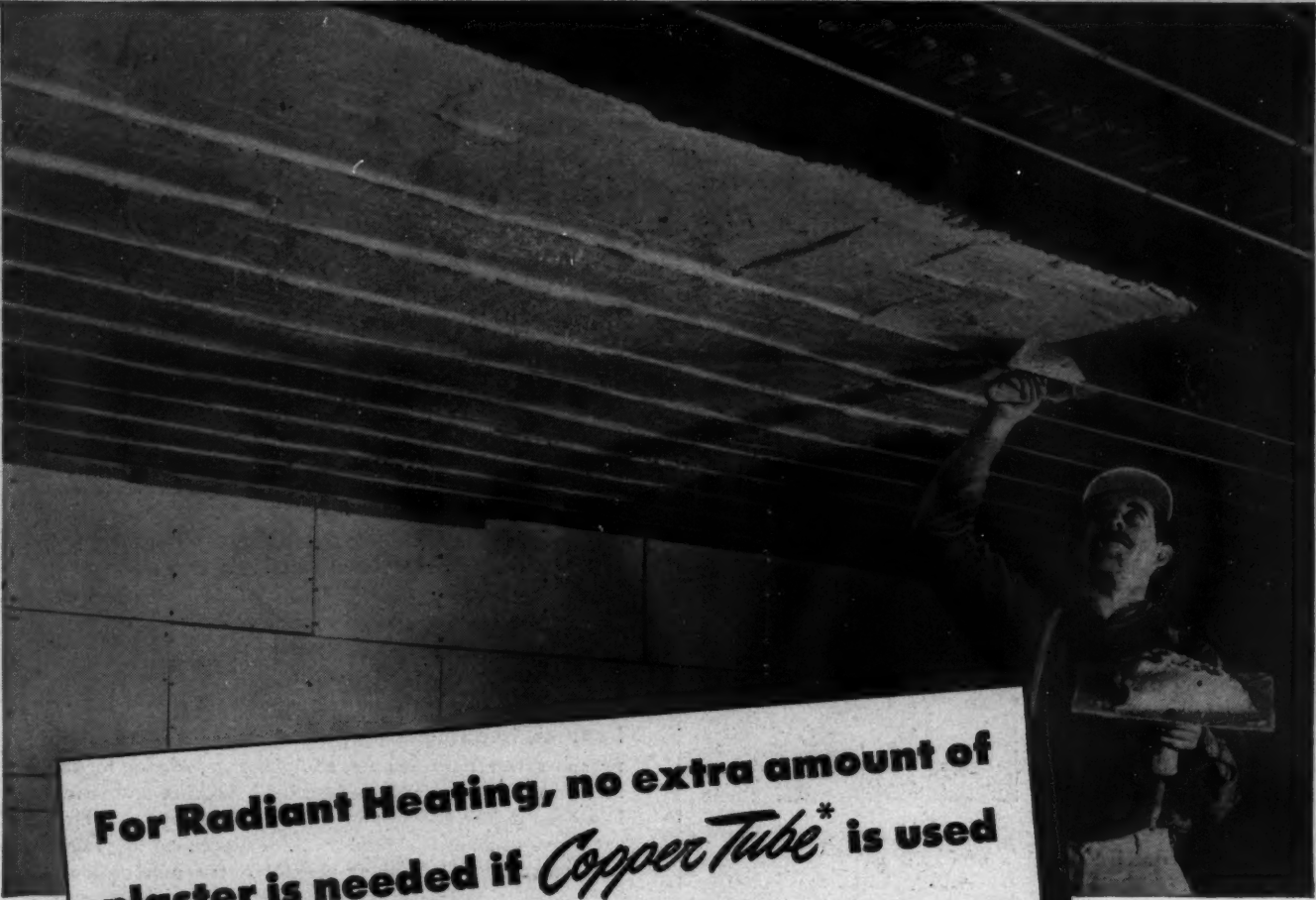


rigid conduit: General Electric white, hot-dip galvanized for protection from atmospheric corrosion, and General Electric black, enamel-finished to fight off

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CHASE Copper Tube for Radiant Heating is light in weight...of small diameters — two principal reasons why the standard amount of plaster is all that's required for ceiling installations of radiant heating.

Coils up to 100 feet long can be held in position by a single workman, while the second bends the tube and fastens it in place.

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For full details, send today for your copy. Simply address Dept. AR97.

7 Reasons

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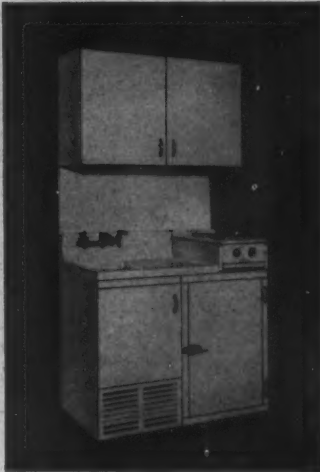
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ALASKA

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34°F below

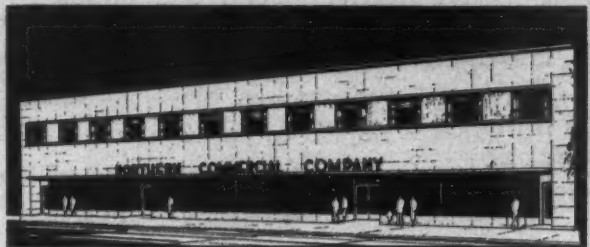
... *Seaporcel*



This is no weather report . . . simply a reference to
fact. Alaska weather is one of daily extremes. In
January the thermometer will range from 56°F. above to
34°F. below . . . and in July it may vary from a high of
92°F. to a low of 34°F. below zero.

Exposed building materials must resist the injurious ef-
fects of such erratic weather, so Anchorage, Alaska, for the
first time is going to have SEAPORCEL Architectural Porce-
lain Enamel. The convincing reason is that it will withstand
the rigors of 58 inches of snow . . . or sudden chilling rains,
concurrent with 92°F. above zero. Very few other finishes,
if any, can surmount these rapid changes in temperature.

The architect's rendering depicted here illustrates a build-
ing 150 ft. long by 30 ft. high. The entire exterior facing
and raised letters are SEAPORCEL Porcelain Enamel in
semi-matte white and rich red finish. Lighting is provided by
neon tubing ingeniously silhouetting the letters against the
facia panels.



Owners: Northern Commercial Company, Anchorage, Alaska
Architects: Bain, Overturn, Turner & Associates, Seattle, Wash.
Gen. Contractor: C. W. Hufelsen, Anchorage, Alaska

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can be fabricated to *any* shape, form, section . . . finished in
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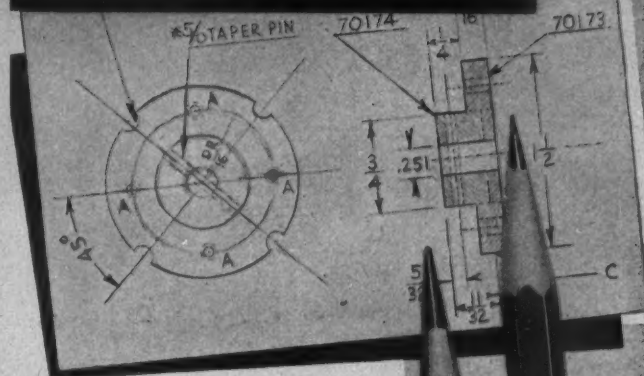
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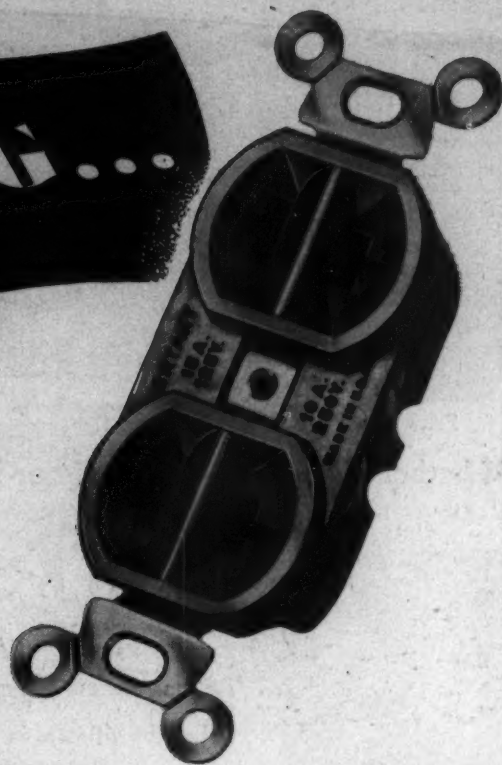
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**the Bryant 9260—a new
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For Side or Back Wiring!**



1. For quick, easy and simple back wiring, just strip off insulation using built-in stripping guide.



2. Loosen terminal screw and insert wire. Stripping guide assures correct depth of insertion.

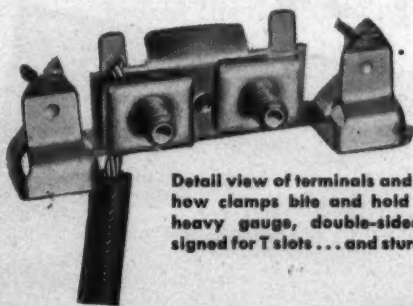


3. Tighten terminal screw. Individual clamps grip wires securely. Exposed wire is eliminated.

Now . . . Bryant research has simplified outlet wiring with a new and unique convenience outlet that meets all high grade specifications. Now . . . for the first time . . . one outlet can be installed for either *side* or *back* wiring as desired.

This new outlet is the Bryant 9260. It has all the features required for top quality wiring . . . a strong, substantial Bakelite housing, a built-in yoke for hard service, plaster ears, and double-sided contacts assure proper mechanical and electrical connections.

Side or back wiring provides added convenience and ease of installation. The large head terminal screws are used in the conventional manner for side wiring. For back wiring, the stripped wire is inserted through entrance holes in the back and securely gripped by individual clamps. This feature adds to safety by eliminating any exposed wire.



Detail view of terminals and contacts shows how clamps bite and hold wire. Note the heavy gauge, double-sided contacts designed for T slots . . . and sturdy wire clamps.

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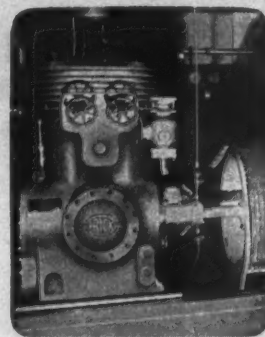
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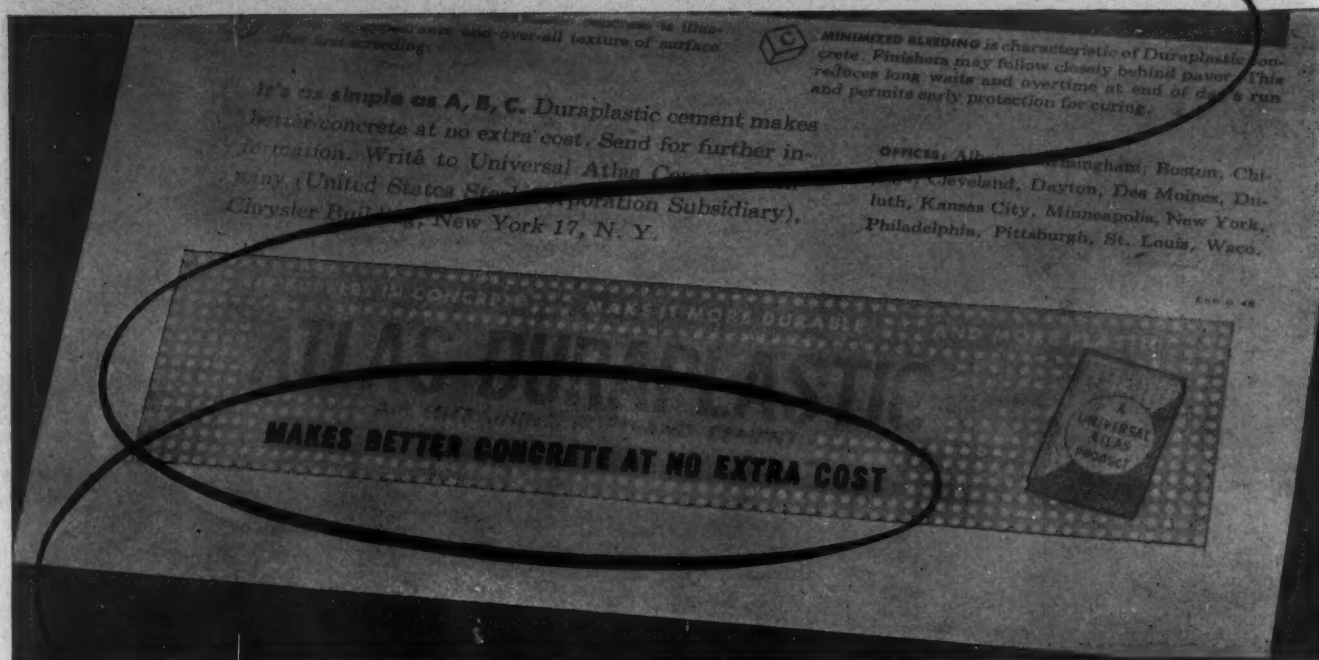
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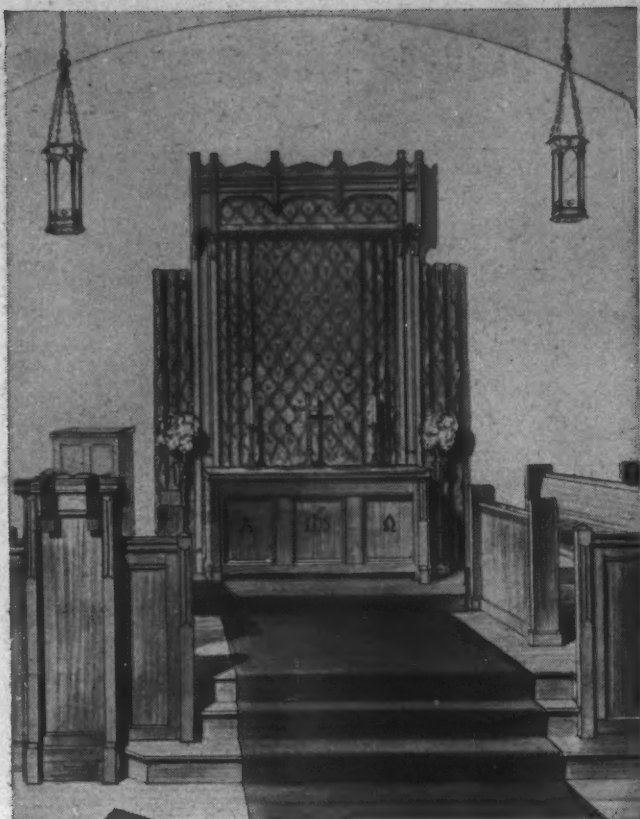
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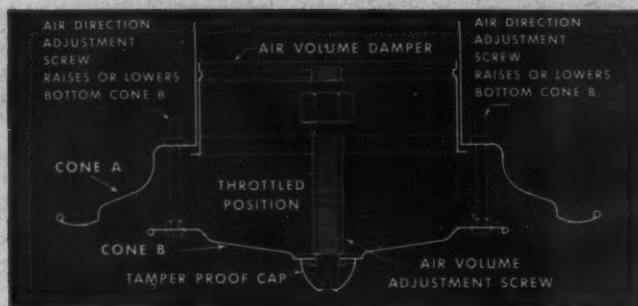
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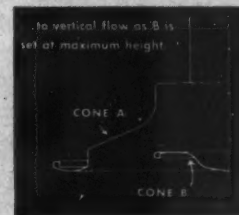
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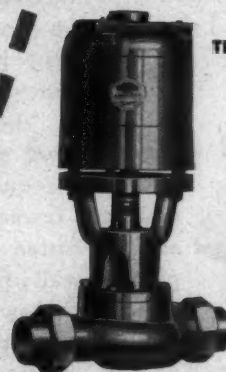
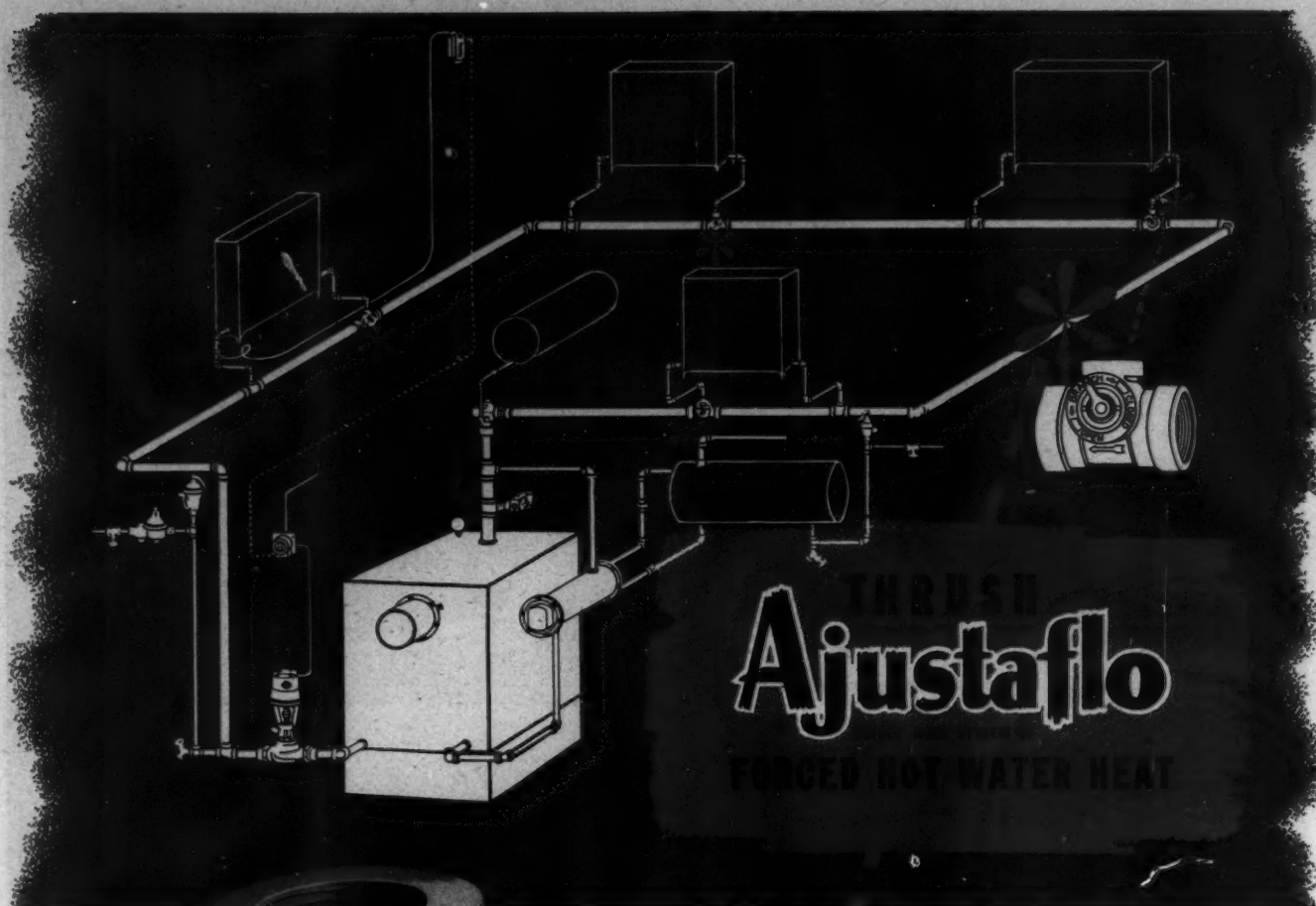
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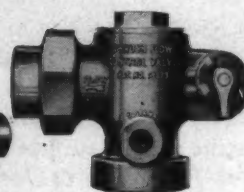
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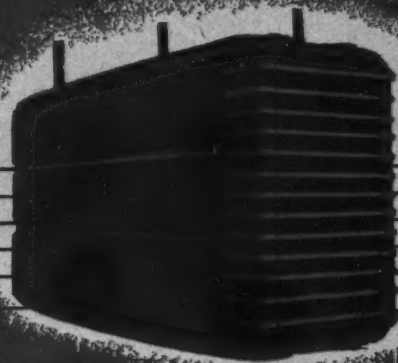
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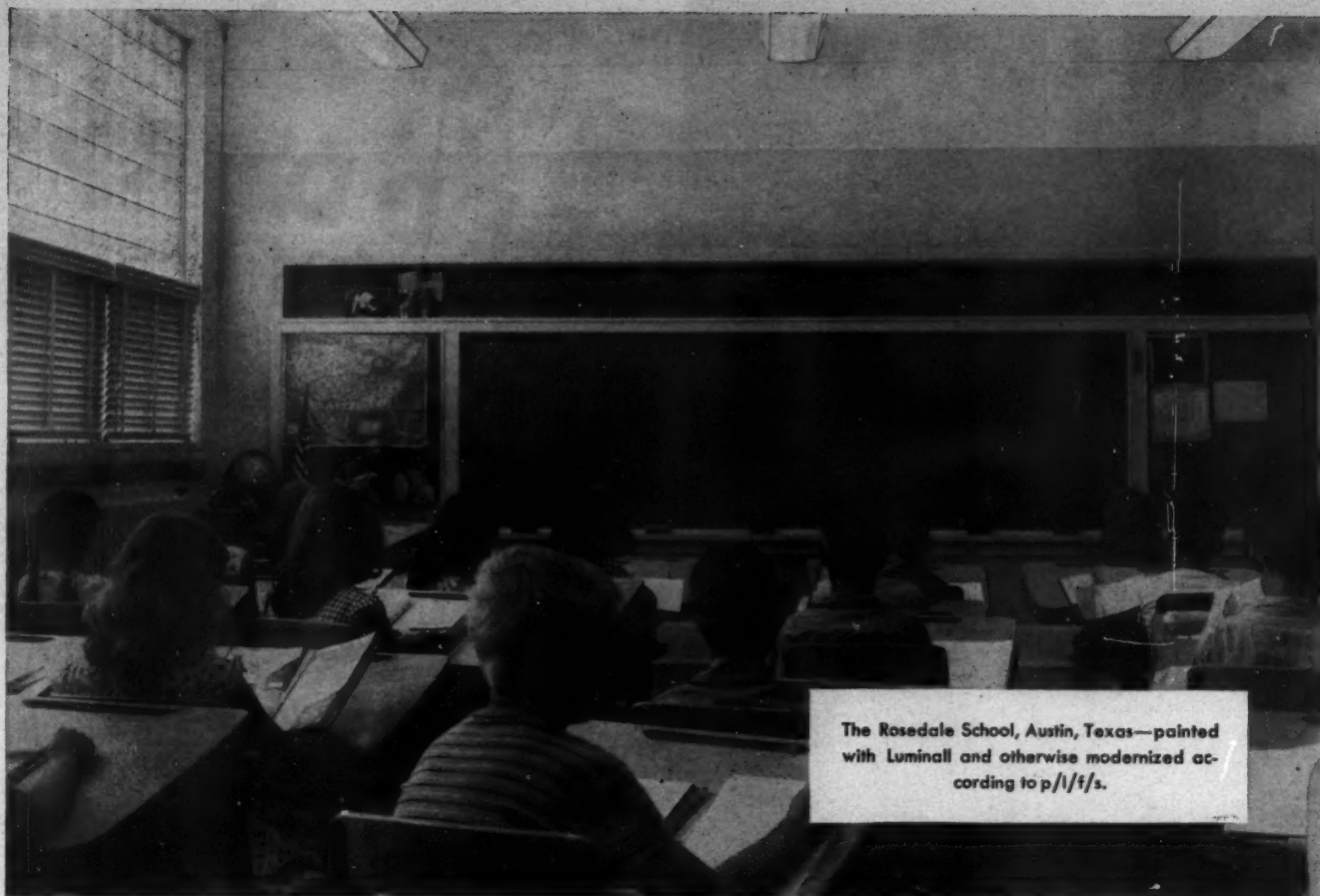
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The Rosedale School, Austin, Texas—painted with Luminall and otherwise modernized according to p/l/f/s.

The Advantages of LUMINALL PAINT in the Harmon Technique

For convenience, p/l/f/s is used as an abbreviation of "painting, lighting, fenestration and seating as coordinated according to the Dr. Darell B. Harmon Technique."

When schoolrooms are modernized according to this technique, a profound improvement is noted in the educational progress of students as well as improvements in their physical well-being. The cost of p/l/f/s modernizing an old schoolroom has been as low as \$40 in some areas. This type of modernization is applicable to many factories, workrooms and offices.

Luminall paint is ideal for painting walls and ceilings in a p/l/f/s job. It is highly light-reflective—up to 90.6%

for white. It maintains this reflectivity because it does not "yellow" or discolor from age and exposure. It diffuses reflected light thoroughly. Luminall paint was used in the Mexia, Texas, Rosedale (Austin, Texas) schools which played such an important part in the development and testing of p/l/f/s.

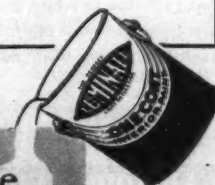
Ask for a copy of Dr. Harmon's "LIGHT ON GROWING CHILDREN," reprinted from Architectural Record. On receipt of sketches showing dimensions and details of schoolroom, specifications will be furnished according to the Harmon Technique without cost or obligation. NATIONAL CHEMICAL & MFG. CO., 3617 S. May Street, Chicago 9.

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Use Luminall paint for finishing new work or remodeling jobs. You can apply it over damp plaster without damage to either plaster or decorating. Lets you deliver a complete job sooner. Luminall is a Casein base paint. Thins with water. Sold by more than 3000 leading paint merchants.

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paint for interiors



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50 AMP., 250 V.

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These quickly-wired Outlets and Caps have every improved feature for easy installation *and use*. Straight-in wiring with solderless connectors make fast work of range hook-ups. Cap and Receptacle combination make a neat, compact installation with attractive harmony of design.

Range Cap No. 7952 is of polished black Bakelite, designed to match the Receptacles. Range Outlet No. 7950 is surface type; polished black Bakelite. Also available in white Ivorylite: No. 7950-I. Range Outlet No. 7987 is flush type; polished black Bakelite. If wanted with .040" brush brass plate, specify No. 7990; with .060" plate, No. 7991.

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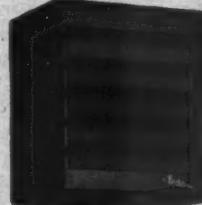
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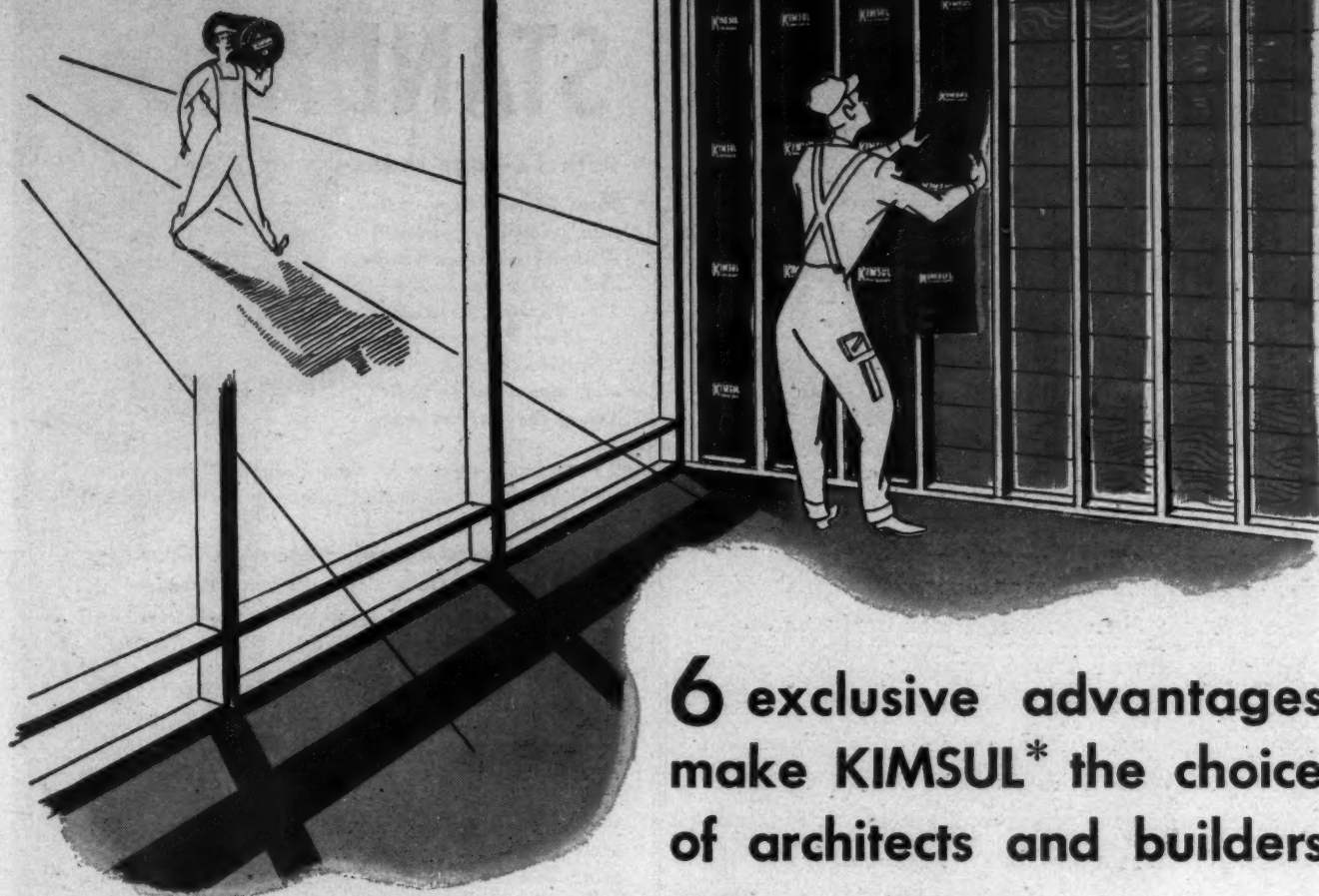


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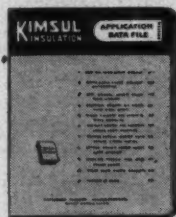
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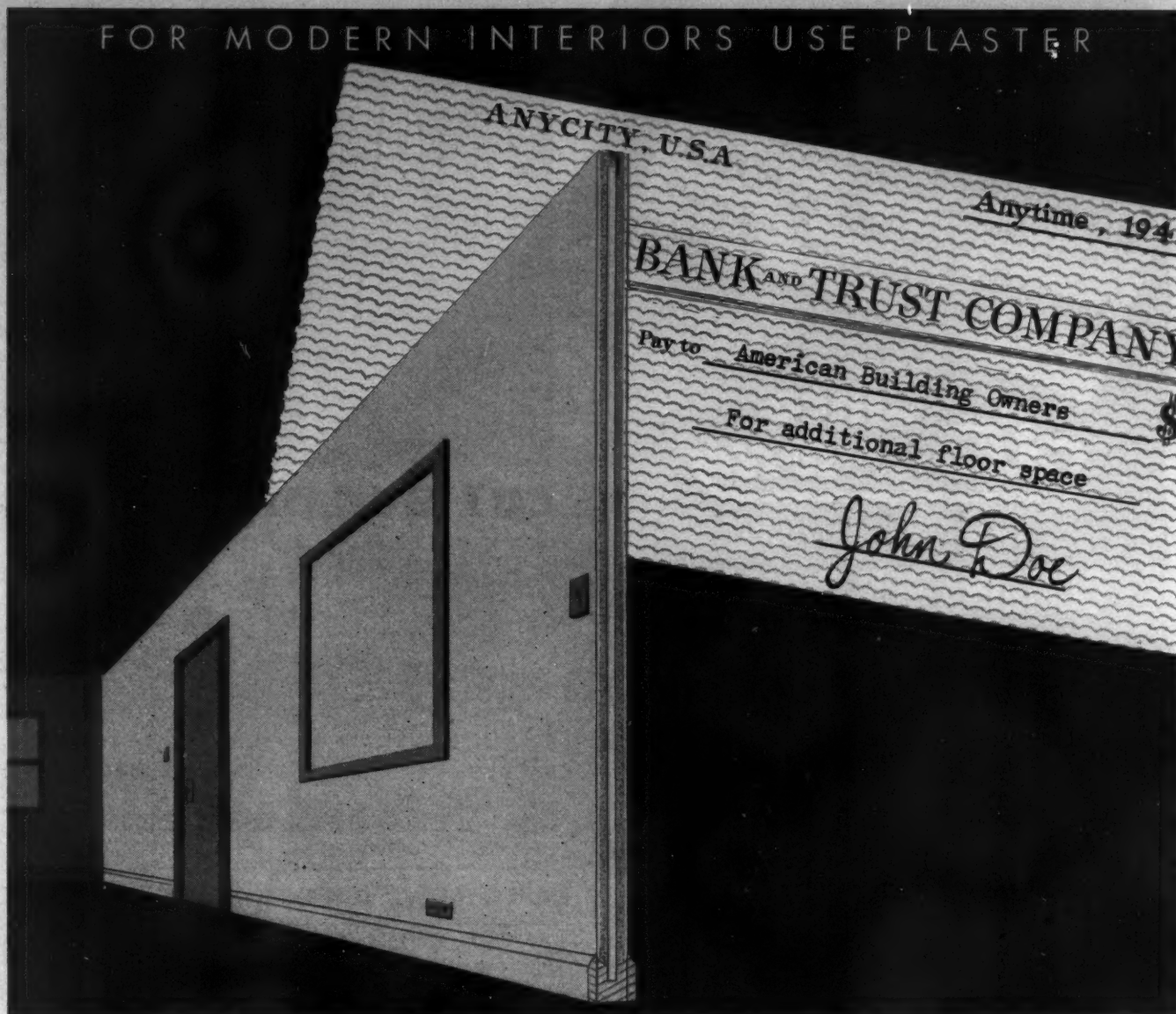
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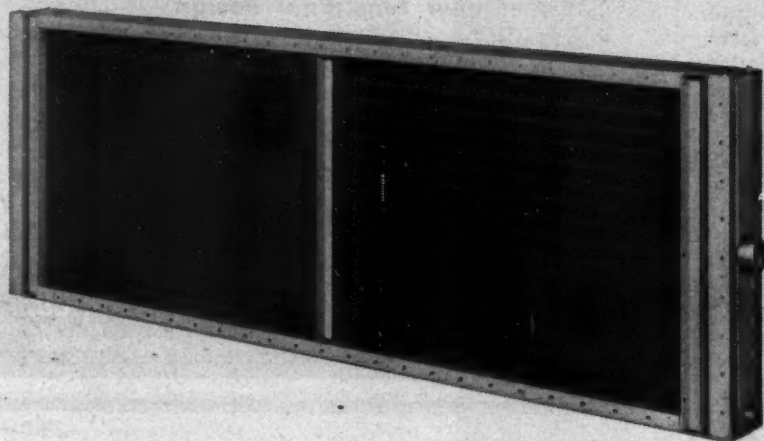
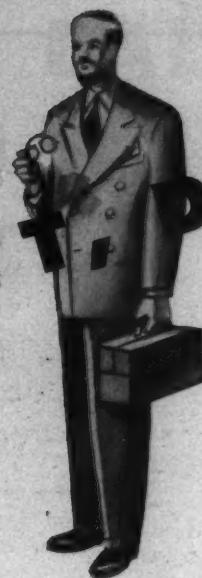
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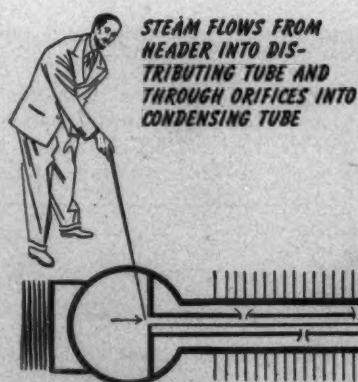
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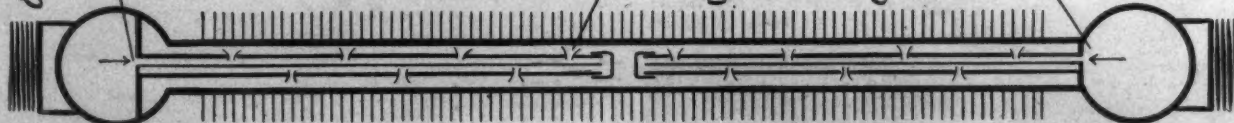
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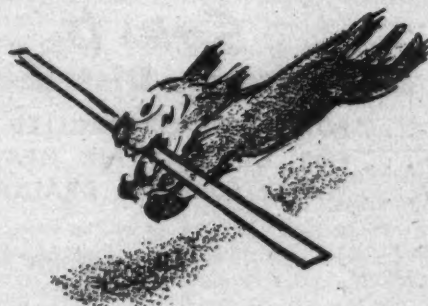
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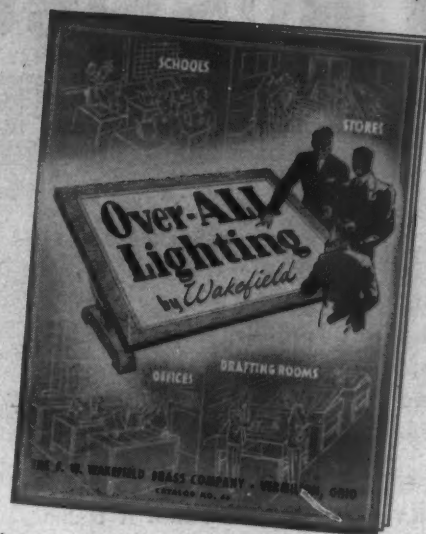
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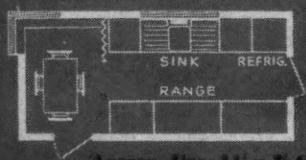
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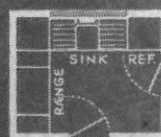
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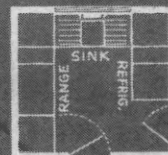


Approx. Size: 11' x 7' 6"

At left is the floor plan of the kitchen shown. Of course, the Crane Sunnyday Sink lends itself to smaller arrangements, too, as suggested in the two kitchens on the right.



Approx. Size: 8' x 10' 6"



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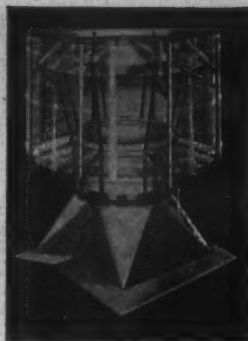
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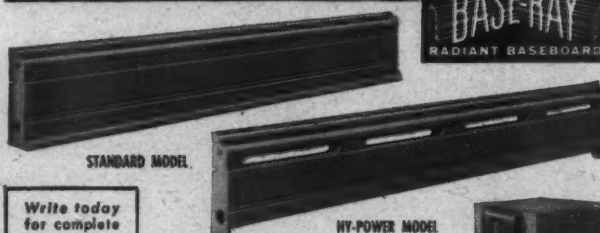
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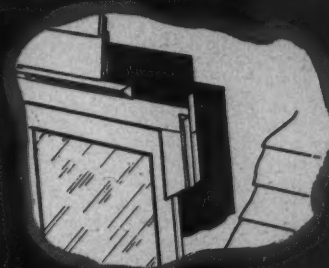
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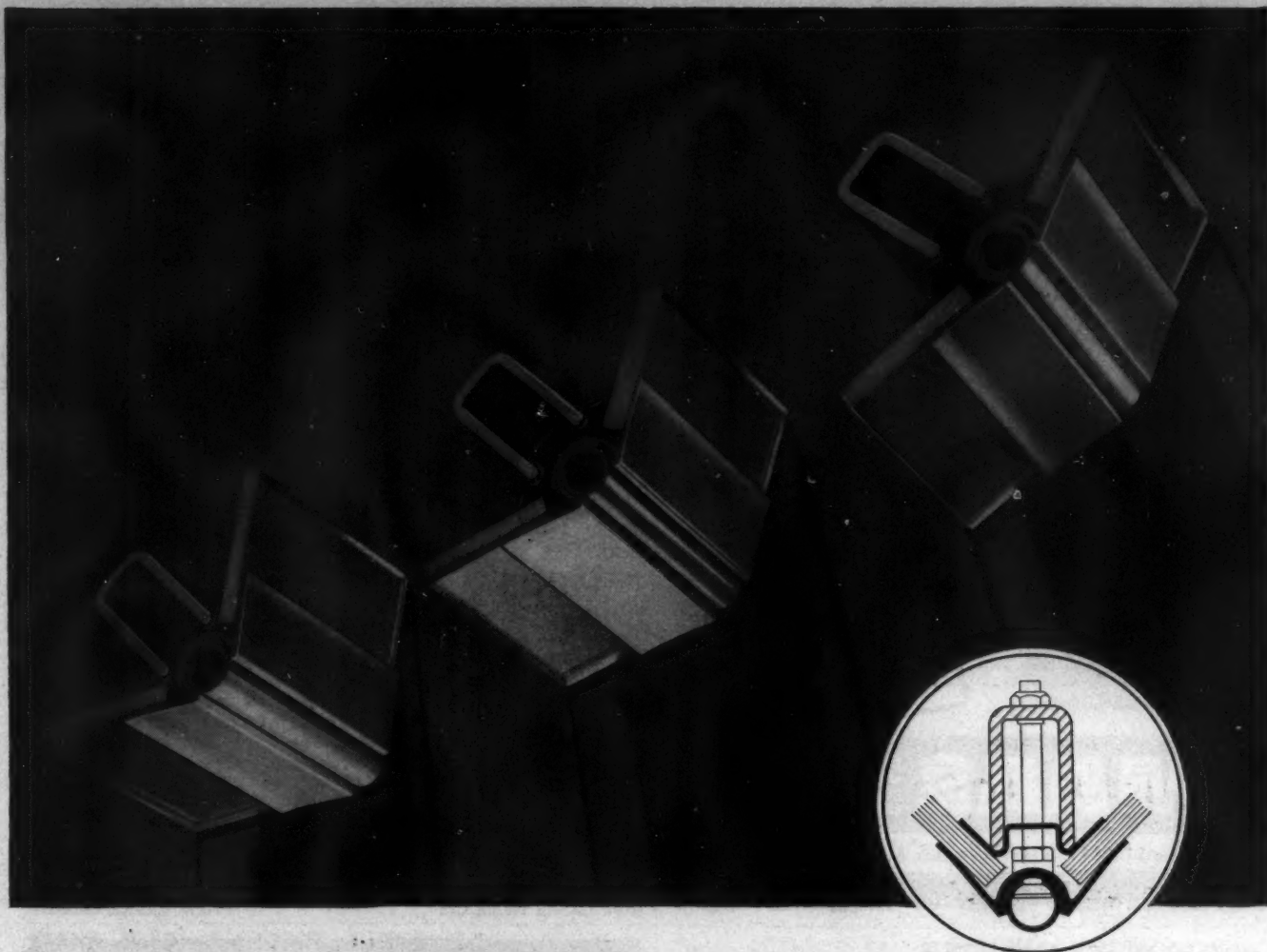


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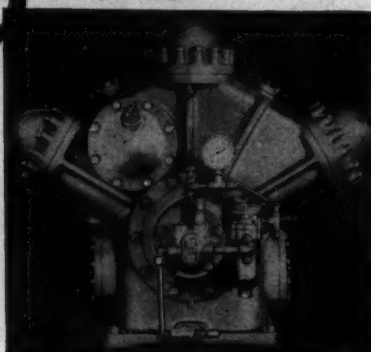
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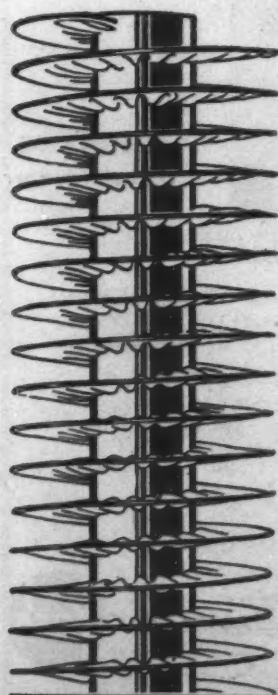
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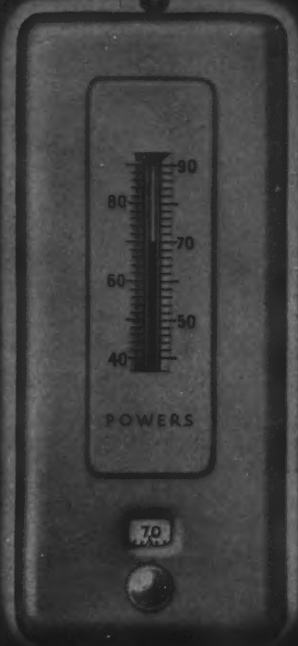
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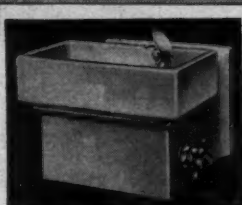
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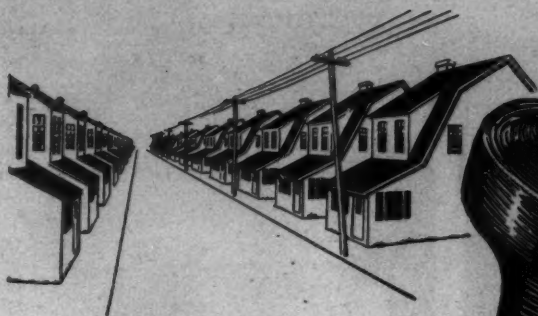
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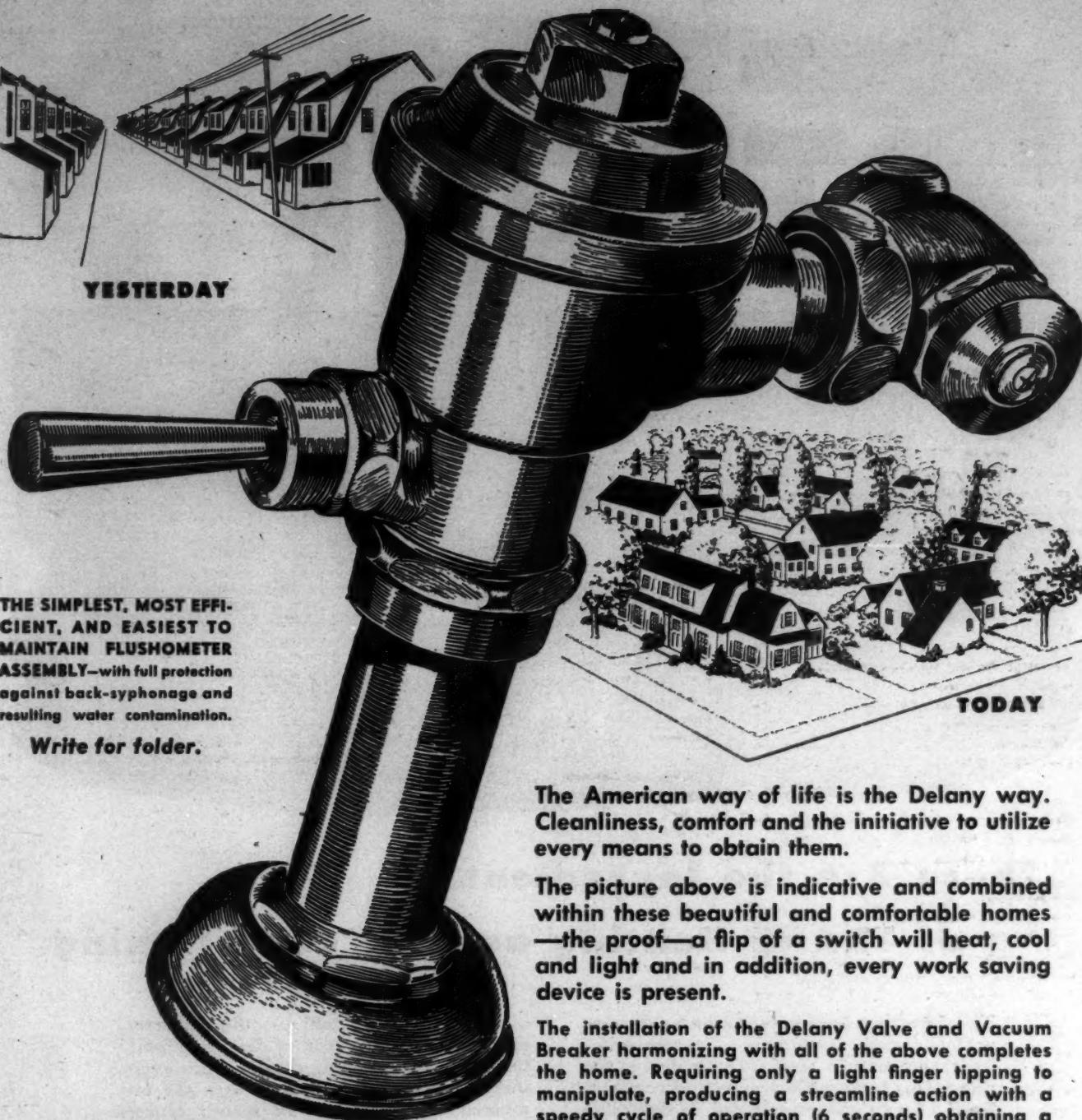
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